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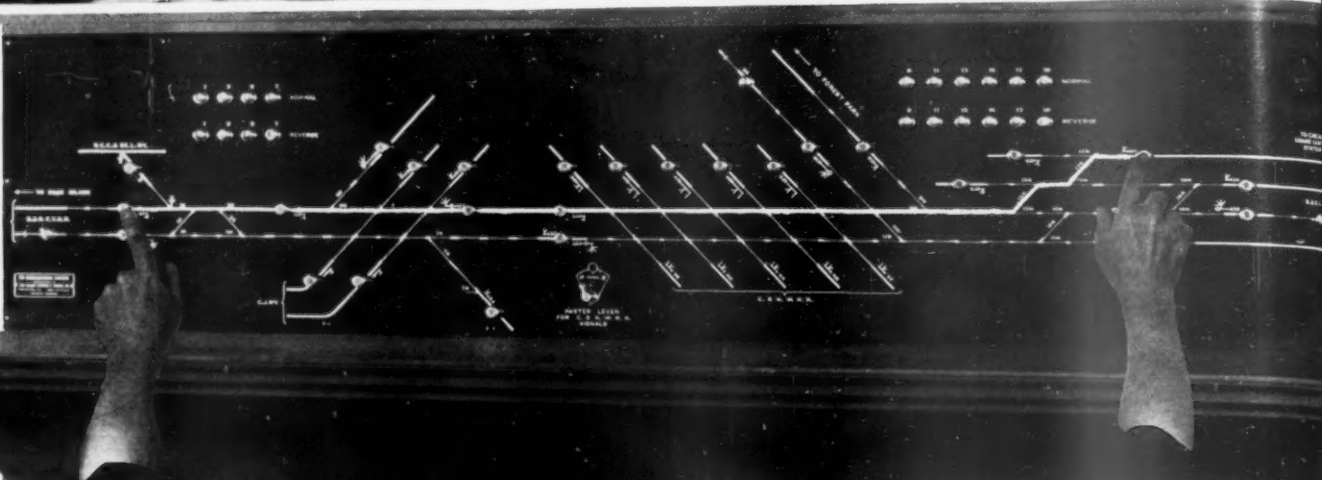
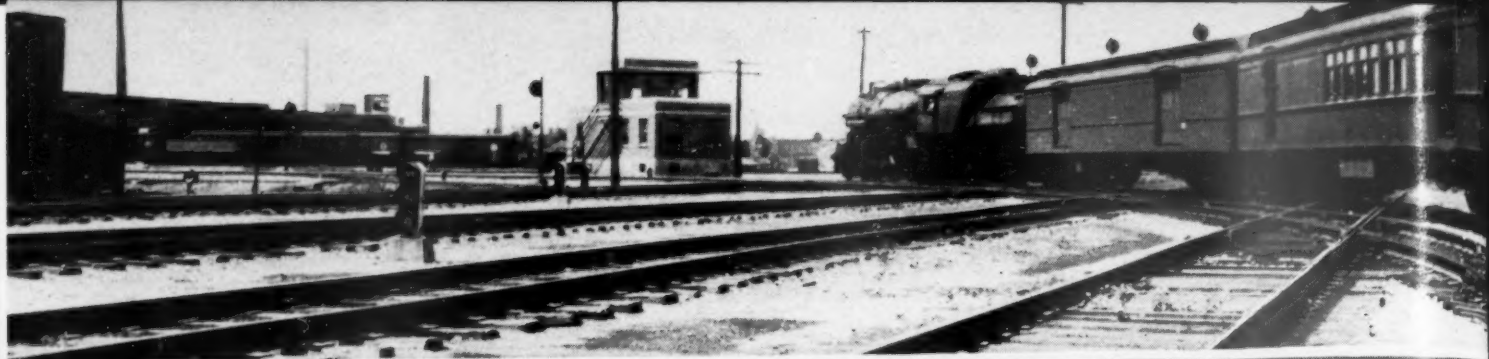
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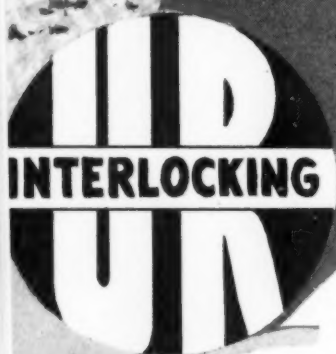


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RAILWAY AGE

Why Junior Railway Employees Are Treated So Badly

There is a revolt brewing in the railway unions. We read the union magazines, and they throw light on what the younger men think of "mileage hogging" and other such union-made policies which enrich the old heads at the price of starvation for the junior railroaders. We are also receiving scores of letters from these younger employees—and they are growing more and more hopeless of getting anything from the present leadership of the standard unions. They are beginning to understand that present union policies not only are hurting them *now*, but tend to wreck the future prospects of employment in the railroad industry. The younger railroaders are beginning to understand that a bankrupt industry, without the funds to keep up-to-date in equipment and service, must fight a losing battle with its competitors. What may become of the railroads' capacity to provide good jobs 15 or 20 years from now does not mean much to an old head. It means everything to an employee under 45.

A Golden Opportunity for Young Leaders

The revolt has not yet produced its leaders, but they will be forthcoming—because the letters we are getting from some of these younger employees show they know more than many supposed experts about what is wrong with the railroads and how to restore their health. Such intelligence is not going to lie around idle. There are too many thousands of unemployed railroaders eager to flock to leaders who will show them how to use their political power to put an end to the mistreatment they are enduring.

If it were not for the awakening of these younger employees, the future of the railroad industry would look blacker even than its present condition. Because, unless effective opposition develops, present union leadership will head the railroad industry and everybody in it to the ash can. That is a strong statement—but have a look at the evidence.

Unemployment No Concern of Union Heads

First and foremost stands the fact that union leadership shows almost no concern regarding unemployment in the railroad industry, present or prospective. Here is a phenomenon that just cannot be explained by any reason except that the union leaders care nothing at all about what happens to the younger employees. A total of 257,000 railroad employees have been furloughed since June, 1937. Does anyone ever hear any of the labor leaders worrying publicly about that fact, or see them taking any steps to try to get jobs for these men? On the contrary, the union leaders are devoting all their energy and political pull exclusively to the effort to keep the old heads in the highest paying jobs they ever had.

The union leaders' concern for the old heads' present favored status is so great and their disregard of the plight of their furloughed members is so complete that at the last session of Congress they even blocked the passage of a bill for government loans which would have enabled the railroads to re-employ some of the furloughed men. The bill would not have hurt the old heads, while it would have helped the younger men some—and yet the union chiefs destroyed it purely out of spite because the railroads had dared try to reduce the old heads' pay.

Why Union Indifference to Loss of Jobs?

Some people find it hard to believe that any union actually does disregard the question of unemployment the way the railway unions are disregarding it. They would find less difficulty in understanding the situation if they would realize that *on the railroads, unlike most other industries, the men who benefit from high hourly wages and from "make work" rules are an entirely different set of men from the group which suffers un-*

employment if wages and working conditions are made too onerous.

President Roosevelt called attention to the fact that in the building industry exorbitantly high daily wages reduce the annual earnings of building workers because they give all of them less work to do. This reasoning is sound, and it usually is not hard to get building workers to accept it. Show them months of steady work at rates below the union scale, and you will see them take the jobs in communities in all parts of the country. The same reasoning applies with equal force to the railroads, *but with this important exception*: namely, that in the building industry it is the *same* employees who insist upon an exorbitant hourly wage and who suffer the resulting unemployment, whereas on the railroads it is one man high on the seniority list who insists on the high wage and gets it, while the resulting unemployment is not suffered by him, but instead by some poor devil of a junior employee at the tail end of the seniority list.

One Man Gains, Another Suffers

The reason for this distinction between the railroads and many other industries is that the railroads are a continuous business. They have jobs for at least a minimum number of employees no matter how high the wages nor how unreasonable the working rules. Under the seniority rule, the old heads hang on in bad times as well as good. There is never any unemployment due to depression for them. And if they can control the policies of the unions, as they do at the present time, they will never willingly make the slightest concession in their privileges, no matter how necessary their co-operation may be to the present employment of their younger fellow-employees or even to the future existence of the industry itself. After all, what motive of self-interest is there for a man within five or ten years of the retirement age to make any present sacrifice to insure the existence of his job 20 years hence?

Of course, we are dealing in generalities here. There are many old heads who have a sincere interest in the success of the railroads, and who also want to see the younger men employed. But such incentive as the old heads have to such views is wholly a moral incentive. They are given little or no economic incentive to wish their industry well, or to care very much how much job-giving power it has 20 years from now; and moral incentives are much weaker with most men than economic incentives. The absence of such economic incentive alone can explain the otherwise inexplicable indifference of many railroad employees to the present plight of their industry and its hundreds of thousands of unemployed.

Our conclusion with regard to the dominance of the unions in the selfish interest of the old heads is a hard saying. We should like to avoid it if we could—because, individually, the old heads have got it all over

some of the streamlined younger generation when it comes to being real honest-to-goodness railroaders. But facts are facts, and there is no use trying to blink them. So let's look at a few more:

Union Concern for Junior Employees Constantly Declines

Last summer, when the non-operating unions got their increased wage contract with the railroads, one of the provisions they wrote into it was one that *the railroads would have to quit spreading the work*. That is to say, if a railroad has to reduce its expenses, it has got entirely to lay off junior employees instead of working entire forces, say, three or four days a week. When the wage increase was under discussion, Chairman Enoch of the carriers' negotiating committee warned the union negotiators that the increase probably would force the railroads to lay off men. The union leaders, not being stupid, of course knew that such an outcome was bound to result unless business greatly improved—but they went ahead anyhow, knowing that by getting the old heads the highest pay they had ever enjoyed they probably were automatically condemning many junior employees to a loss of their jobs.

Then last winter came the train limit bill, for the defeat of which the younger employees who are still hanging onto their jobs should be eternally grateful to the House Committee on Interstate Commerce. This bill would have served greatly to reduce the number of trains still earning a profit on the railroads. It is the profits from such trains, meager as they are nowadays, which have enabled the railroads to carry on and employ as many men as they have, when so large a part of their operations have been unprofitable. Killing off the profitable trains would have by now forced the railroads to abandon many lines and many trains which are still being kept in operation in the hope that traffic may revive. Just another attempt of the strongly entrenched old heads, particularly those in the favored train and engine services, to make artificially a few more sure jobs for themselves—taking it out of the hides of the maintenance and shop employees and train and engine men on "ragged edge" branch line runs.

Trucks and Waterways Less Dangerous Than Employee Indifference

It is not so much the buses, the trucks and the waterways which threaten the future of the railroad industry as it is the fact that *the great mass of older railroad employees have no economic interest in whether these competitors take away the railroads' business or not*. If the mileage or hours and pay of all employees were down proportionately when the railroads were in bad shape there would be a vast change in the kind of politicians the railroad unions would support. As it is now, it is the legislator who votes for "full crew" and train limit bills and who makes speeches favoring high wages

(i.e., the politician who favors the old heads at the expense of the younger employees) who receives union acclaim and support. These same politicians can be truck and waterway advocates and in favor of the St. Lawrence seaway and against the Pettengill bill — and the union leaders will still plump for them. But suppose *every* railroad employee lost something when traffic was unfairly diverted to trucks or waterways by governmental favoritism—would the railroad unions then be backing some of the anti-railroad politicians they now support?

Railroad managements, as far as we can learn, have thus far preserved a strictly "hands off" policy in the conflict of interest between their older and their younger employees. If the old heads have dominated a union on a railroad and demanded high mileage minima, managements have conceded the demand, believing the conflict between older and younger employees to be none of their business. The wisdom of such an attitude is highly questionable. Human nature being what it is, the more railroad employees there are whose income goes up when the railroads prosper and goes down when the railroads' earnings go down, the more railroad employees there will be who will vote for the prosperity of the railroad industry and try to get and hold business for it.

Why Fear of the C. I. O.?

We hear fears expressed sometimes of an invasion of the railroads by John L. Lewis and C. I. O.; but we have never been able to understand or share these fears. Suppose there were an industrial union on the railroads—would it favor train limit legislation and other "make work" measures, when the jobs thus manufactured were secured only at the cost of their jobs to shopmen and section hands? Naturally not. An industrial union values the job of one craft as much as of another. Look at the coal industry, now enjoying more assistance from the government than it ever had in history in the endeavor to restore its profitability—thanks largely to the political power of John L. Lewis' Mine Workers' union. And meantime the railroad unions, out of anger at the railroads for daring to question the continuance of the old heads' favored status, block a measly loan measure to help the railroads and furloughed maintenance men. We can think

of a lot of things which would be worse both for the railroads and for railroad employees than a little C. I. O. competition with the present craft unions—for instance, a continuance of present conditions of complete union indifference to the well-being both of their own younger members and of the industry which employs them.

Give Every Railroader a Financial Incentive to Work for the Industry

The interest of railroad management and owners, on the one hand, and of younger railroad employees on the other, is identical. When the younger employees have jobs and are making money, the owners are making some too. When the owners have no incomes, neither do junior employees have any. Both are in the same boat. It is time that they recognized their community of interest and began playing ball with each other. And they should continue to co-operate at least until they change the job set-up so that the old heads are given a direct financial interest in how much money the railroads are making. When that day comes, the railroad "problem" will be largely solved. Because there are enough brains and energy in the railroad industry to meet those of all competitors.

The trouble has been to date that a large part of the human energy engaged in the railroad industry has been provided with no incentive to work for the industry's welfare—and hence works against it more frequently than for it. The younger employees and the managements, in co-operation, could probably by determined effort change all that. At least in their mutual interest they ought to try.

Indexes to Volume 104

The indexes to the latest volume of the *Railway Age*, January to June, 1938, are now ready for distribution and copies may be had by those subscribers desiring them. Requests should be addressed to the Circulation Department, *Railway Age*, 30 Church Street, New York. Subscribers who have in previous years made application for the index need not apply again; they will continue to receive it as long as they continue to subscribe.

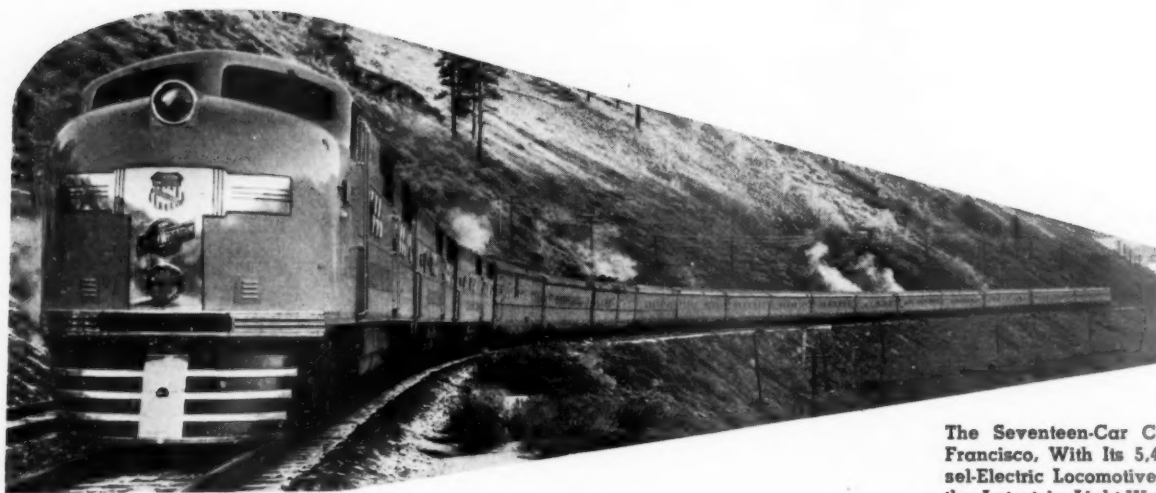
Aren't Jobs as Important as Wage Rates?

It is not ordinarily accepted that the desire of a group of textile producers to have a high tariff, or the desire of a railway labor union to make more jobs, is quite as much part of the economic process as is the act of manufacture of cloth, or the working out of a wage rate for a crew of trainmen. Is it not conceivable that in the new economics we should concern ourselves a little with

what happens when the merchant's mill goes under or what happens when the trainman loses his job? It might be found that the motive of profit or gain which is supposed to inspire the manufacturer to invest his capital and produce, or the trainman to work, is minor, compared to the black fear which he and his family and friends have of being relegated to an economic death.

A. A. Berle, Jr., in the *Virginia Quarterly Review*

Light-Weight Diesel-Electric Trains



The Seventeen-Car City of San Francisco, With Its 5,400-hp. Diesel-Electric Locomotive, Is One of the Latest in Light-Weight Trains on the Union Pacific

A resume of six years' revolutionary development—A comparison of operating characteristics and costs

A SYMPOSIUM on transportation featured the annual mid-summer convention of the American Society of Civil Engineers at Salt Lake City, Utah, on July 20. At this conference, Fred Lavis, consulting engineer, New York, reviewed advances in the status of transportation and set forth the dominating position of the railways in this field. He also directed attention to the difficulties confronting the railways, induced in part by the subsidization of competing forms of transportation. Mr. Lavis suggested pump priming for the railways by the extension of credit to them on a basis of equality with the highways, airways and waterways. Following this introduction, papers were presented on Light-Weight Diesel-Electric Trains, by Ralph Budd, president of the Chicago, Burlington & Quincy, and on Diesel and Turbo-Electric Light-Weight Streamline Trains, by C. P. Kahler, electrical engineer of the Union Pacific. Abstracts of the papers by Mr. Budd and Mr. Kahler follow.

Lessons from Five Million Miles

By Ralph Budd*

Until comparatively recent years predominant attention has been given to advancing operating efficiency by reducing grades, curves and distance, so that more tonnage can be handled in less time by a given locomotive. Formulae to determine the economic justification for such expenditures were developed in great detail and generally applied. This type of work and the results which operating officers were able to get from it provide the chief reason why the railways were able, for many years, to meet rising costs of wages, materials and taxes

without corresponding increases in freight rates and passenger fares, and at the same time do the necessary financing to carry out the improvements.

The elemental thing from the standpoint of operation is to eliminate or avoid all the work possible, and to do what work remains with the utmost efficiency. Using a car that weighs less but carries as much or more load, saves work just as surely and simply as does the shortening of a line or the lowering of a mountain summit. When built of standard materials, the increasing size of cars, locomotives and trains which characterized the rising efficiency of railroad operation could mean only one thing, and that was constantly heavier rolling stock, track and structures. The halting and eventual reversing of this tendency was made possible by the production of metal alloys which either have very low specific gravity or possess greatly increased strength. Passenger cars built of aluminum and stainless steel weigh about 60 per cent as much as old standard cars. Various other alloys are suitable for certain parts of light-weight cars and especially for reciprocating parts of locomotives. By the use of still other alloys it is possible to build freight cars which weigh 24 per cent less than so-called standard cars and keep within reasonable cost limits.

It has been in the passenger car field that the earliest and most extensive use has been made of light-weight construction. Reducing the weight of passenger cars lightens the entire loaded train in a spectacular manner because the weight of the passengers carried is so small compared with the weight of even light-weight cars, being about eight per cent. But in modernizing passenger service, elimination of dead weight is not the only consideration, important as it is. The effort to attract travel back to the rails centered largely around faster trains, and at speeds ranging from 60 to 100 miles an

*President, Chicago, Burlington & Quincy.

hour, which are now common, streamlining and smoothing of the outside surfaces aid substantially.

Why the Zephyrs?

It is perhaps worth while to state the considerations which in 1932 and 1933 led to the creation of the Burlington's first streamline train of 1934. The idea which grew into this train called the Zephyr envisioned a comparatively small train to take the place of a steam train where daily service was necessary for local accommodation between places where travel was heavy but where most of it moved on the highway.

A train that could be handled by a single internal combustion engine mounted over the forward truck—the power truck—would insure the economy that had been proved with the gas-electric cars. Such cars had been in extensive use for more than 10 years and there were some 600 of them in the country, but the concept of the new train embodied four vital departures. First, in addition to the head-end business of mail, express and baggage, the new train must be able to accommodate many more people than had been riding on the old train if it was to increase passenger revenue. Second, it must be operated at higher speed, for that was considered an essential passenger appeal. Third, it must be ultra-modern as to riding qualities, interior decoration and air-conditioning. These combined demands necessitated the lightest possible weight consistent with absolute safety, and going the limit in the way of eliminating wind resistance so that the minimum power plant could handle the maximum train capacity measured in seating and floor space.

A stainless steel, gas-electric car built by the Edward G. Budd Manufacturing Company, upon which some of us had the privilege of participating in a demonstration trip on September 29, 1932, proved to be the concrete thing which led to the first Burlington Zephyr. This car had been running more or less regularly since January 14, 1932, and was the first railroad unit of which I have any knowledge in this country actually to demon-

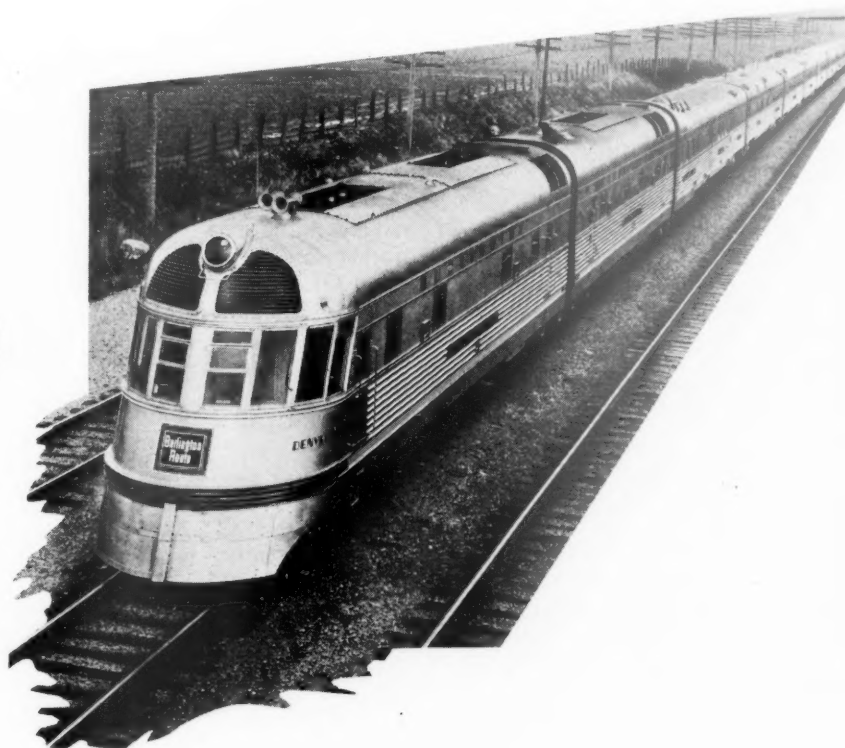
strate, by operating under its own power, the possibilities of light-weight train construction. It was most impressive because it embodied a new process of fabrication which preserves the very desirable qualities of stainless steel, namely, great strength and rustlessness.

The First Zephyr

Immediately following that visit to Philadelphia in September, 1932, plans were initiated for a small but complete and ultra-smart day train. Other strong alloys, as well as several features borrowed from the automotive industry, were embodied in those plans. Perhaps in February or March, 1933, the Electro-Motive Company advised us that we could count on having a two-cycle Diesel engine ready for use in our new train. That train was delivered on April 18, 1934, powered by the first two-cycle Diesel engine ever placed in a streamlined train in America.

After several test runs of varying lengths it was decided to undertake a long trip at sustained high speed, and the route chosen was from Denver to Halsted street, Chicago, which by the line through Plattsmouth is 1,015.3 miles. This run was made successfully on May 26, 1934, in 13 hr. 5 min., at an average speed of 77.6 miles an hour, and a top speed, clocked variously at 107 to 112 miles an hour, without a single stop enroute. This trip was made without any preparation of the track, but on a most carefully prepared schedule, which was placed in the hands of officers most familiar with the roadway, one of whom rode continuously with the engineer, and advised him of the permissible speeds at all points. Other track experts recorded the speed for each mile of the trip and made notes on how the train rode under the various conditions. The information thus gained as to the safety and comfort with which high speeds could be attained on track of known characteristics was invaluable and not obtainable in any other way. That information has since been used by the Burlington in laying out its own track work; it has also been presented and discussed verbally and in technical papers

The Powerful, Eleven-Car, Full-Section Denver Zephyr of Today Is a Long Stride From the First Three-Car Zephyr of Only Four Years Ago



written by Burlington engineers, making it available in every practical way to railroads everywhere.

Others Follow

The success of this small articulated train led to the construction of others, some of which are quite large. The newer cars embody both interchangeability and extreme width. There has thus been sacrificed in later construction of light-weight trains, considerable of the operating economy of the original Zephyr in order to have cars that can mingle with so-called standard or conventional equipment. The area of cross-section of the front of the original Zephyr is 100 sq. ft.; that of the Denver Zephyr is 130 sq. ft. The top of the original Zephyr power car is 12 ft. 2 in. above the rail, compared with 13 ft. 10 in. for the Denver Zephyr locomotive. The tops of the trailing cars in each case are about a foot lower.

How much is it economical to spend to eliminate weight in a passenger car that can be handled in a train along with conventional cars? Also, how much additional, if anything, should be spent for a Diesel rather than a steam locomotive, to handle the high-speed train? There are no formulae by which these questions can be resolved. We know that the light-weight stainless-steel cars, whether on small or large size trains, withstand rough usage, including collision and derailment, better than cars of the so-called standard type. We know also that the maintenance cost of cars with stainless-steel structural members is low compared with our other cars, and that the stainless-steel sheathing, which requires no painting, can be kept clean much more easily and cheaply than cars which have painted exteriors, and can really be made like new at each washing.

Easy on the Track

Another thing we know is that our Diesel-electric light-weight trains are easy on track. In order to have any train ride with perfect comfort at high speed it is necessary, of course, to have track that is in good line and surface, but these trains do not affect line and surface of track or damage the rail, as has been found to be the case in some instances with other types of trains and locomotives, even with locomotives of recent construction. We believe this is largely because the heaviest axle loads are only 54,000 lb., the traction is applied through rotary motion, and the center of gravity is low. It has been said that low center of gravity causes excessive side thrust, tending to spread the rails and force track out of line, but careful inspection and special check for such effects have convinced our track officers that Zephyr trains do not produce them. While it may be impossible to reduce to exact dollars and cents the value of the benefits just related, we do know that the financial results from the operation of our light-weight trains have been highly satisfactory both through increased revenue and economy of operation.

Where an entirely new train is inaugurated it is possible to compare quite accurately the cost of operating it with the cost of operating a heavy train, but most of the installations of new light-weight cars in the future probably will be by introducing them into existing trains along with old equipment. If, for example, an air-conditioned conventional day coach weighs 160,000 lb. and a stainless steel coach weighs 100,000 lb., eight of the latter can be handled with about the same effort as five of the former. Eight of such light-weight cars in lieu of eight heavy cars in a train is equivalent to setting out

three heavy cars. If the weight of each car is reduced by 30,000 lb. instead of 60,000 lb., of course twice as many new cars will be required to lighten the train to the same extent.

Lightening the tonnage may avoid double-heading; it may avoid running two sections of a train; or it may enable the handling of the train in one section with a smaller locomotive than otherwise would be necessary. In the summer of 1937, for example, Burlington passenger traffic between Chicago and Denver was so heavy that the alternatives just mentioned had to be resorted to. It was possible to handle 17 cars, the average summer train, with a modern 4-8-4 locomotive instead of using a 4-6-4 locomotive which handles the train during the rest of the year. If there had been 8 really light-weight cars and 9 heavy cars in each train, instead of 17 heavy cars, the 4-8-4 locomotives would not have been needed, and all of our 4-8-4 locomotives could have been used profitably at that time for handling freight trains.

The value of reduced stresses in track is as difficult to fix as anything connected with train operation. Being a hidden value renders it no less important. Speed is a direct factor in track stresses and avoiding excessive speed with equipment not especially adapted to it is most desirable. The lowest possible maximum speed is attained by elimination of all service stops enroute, so that the train can be kept running more nearly continuously. A Diesel-electric stands for servicing enroute about 45 min. less than a steam locomotive on the run between Chicago and Denver. If the eastbound Denver Zephyr, which uses 15 hr. 38 min. to Chicago, is delayed 45 min. in leaving Denver, its average speed for the 1,039 miles in order to arrive at Chicago on time will be increased from 66.5 to 69.8 miles an hour and the top speed will have to be about 100 miles an hour instead of about 90.

The availability for service of the Diesel powered trains, in spite of their extremely fast schedules, has been about 95 per cent. Chicago-Denver service was inaugurated on May 31, 1936, and up to July 15, 1938, the Diesel locomotives assigned to these trains had averaged more than 1,030 miles a day. This schedule has been maintained by two locomotives without a standby or spare unit. Current maintenance is handled during the eight-hour daily layover and consists of replacement of moving parts, such as wheels, pistons, cylinder liners, rods, gears and bearings. These are made on a mileage schedule, or on a basis of tolerance in the case of wheels, gears, etc., the renewals, of course, being made before failure of the parts. A major job, such as changing crank shafts, will require perhaps a week in the shop, but experience to date indicates that a crank shaft will not need to be changed oftener than about once every million miles. In the most severe service, this would be about every 2½ years. There seems to be no reason why the high availability should not be continued permanently and, of course, the schedule of replacements gradually will be perfected.

The cost per train mile for locomotive maintenance, locomotive fuel and lubricating oil on the four smaller Zephyrs (3 and 4 cars each) has averaged 6.87 cents. The cost per locomotive mile for steam drawn trains of the same carrying capacity has averaged 28.98 cents. Of course, these were not new steam locomotives, and their schedules were less exacting. For the larger trains, comparisons are more difficult, because we have no similar steam schedules. The cost of locomotive maintenance, locomotive fuel and lubricating oil for the Diesel locomotive now handling 7 trailing cars has been 15.0 cents per mile and for the Diesel locomotive handling 10 trailing cars 21.6 cents per mile.

Light-weight and semi-light-weight streamlined passenger cars have become commonplace. Diesel-electric locomotives handle practically all of the articulated train units; they also handle some of the trains made up of combinations of streamlined and conventional cars, and in some important instances such as the Baltimore & Ohio's Capitol Limited they handle full trains of conventional cars. Where electrification is not justifiable for lack of traffic density, the Diesel-electric may be regarded as a substitute, and is especially adaptable to schedules that are very fast. Its high first cost makes it necessary that its assignments be such as will give large daily and yearly mileage so that the least number of them will be required for a given train schedule.

The underlying virtue of weight reduction is the avoidance of work, that is, the saving in expenditure of energy, while the underlying virtue of the Diesel-electric locomotive is efficient performance of such work as cannot be avoided. From an engineering standpoint the two constitute an ideal combination.

Six Years Progress in Passenger-Train Design

By C. P. Kahler*

About 1932, a special investigation was undertaken by the Union Pacific to determine what could be done to keep railway passenger transportation abreast of the times. The result of these studies indicated that a radically different type of passenger equipment had to be provided. At that time fast steam passenger trains required three nights and two days to cover the distance from Chicago to the Pacific Coast. New streamline trains were designed to make these same distances in two nights and one day, bringing Chicago one day and one night nearer that Coast.

It was not thought possible to make these speeds with the standard steam locomotives available at that time. Instead of side-rod locomotives it was decided to provide electric motors geared to the driving axles of the locomotives, and also to build the locomotives with a lower center of gravity. This avoided expensive changes in track construction and permitted the new locomotives to take the curves at higher speeds than was possible with the high-center-of-gravity side-rod steam locomotive.

Studies of Lightweight Cars Made

Studies were also made with a view to providing light-weight cars of the same strength as the old cars, using aluminum alloy in much of the construction. To reduce the wind resistance, which tests showed was very great at high speeds, it was decided to streamline the trains.

The locomotive was so designed that it could be operated all the way from Chicago to the Pacific Coast in place of the five or six steam locomotives heretofore required. Further, by using Diesel-powered locomotives, it was possible to increase the spacing between fueling and watering points to 500 miles and save much time. In other words, it became possible to reduce the number of fueling and watering points between Chicago and the Pacific Coast from about 25 to 5.

As far back as 1905 the Union Pacific began experimenting with internal-combustion engines for railroad traction and many of the McKee gasoline motor cars developed at that time are still in use. Later on when the gas-electric passenger car came into use, the Union Pacific put many of these in service.

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After much study and experimenting, the first streamline train ever to be built in America was constructed by the Union Pacific. This was a three-car train with a 600-hp. oil-engine-driven generator which furnished electric current to operate the traction motors which were geared to the drive wheels (an arrangement very similar to the gas-electric cars already in service). This train was first shown to the public in Chicago on February 14, 1934.

Before this first train was completed, the building of a six-car train was announced and construction started. This had a 900-hp. Diesel-engine generator. Experiments with this train showed that more power was required for the high speeds at which it was to operate and a 1,200-hp. Diesel engine was installed and an additional car added. This train is now the Union Pacific streamliner City of Portland. It was the first streamline train in America to have sleeping-car equipment and the first streamline train in transcontinental service. The train, in October, 1934, broke all speed records between the Pacific Coast and Chicago and New York, which records still stand. Incidentally, this train is today the fastest train operating between Chicago and the Pacific Northwest.

Another train of 11 cars with 2,100 hp. in a two-unit Diesel locomotive was then built to operate between Chicago and Los Angeles. At the same time a similar train with 2,400 hp. in two Diesel engines, was constructed to operate between Chicago and San Francisco. These two trains had the largest Diesel installation used for passenger trains up to that date.

Later two other trains of 12 cars each, with two-unit 2,400-hp. Diesel engine locomotives, similar to the San Francisco train but with still later improvement, were constructed and put into service by the Union Pacific between Chicago and Denver. They are today the fastest streamline trains operating for distances over 1,000 miles and they were the first streamline trains with sleeping-car accommodations to operate between Denver and Chicago.

Two more trains were then built of 17 cars each, hauled by three-unit locomotives with a total capacity of 5,400 hp. in Diesel engines. One of these trains operates between Chicago and San Francisco and was constructed jointly by the Union Pacific, the Chicago & North Western and the Southern Pacific. The other operates between Chicago and Los Angeles and is jointly owned by the first two railroads. They are the largest Diesel-electric passenger locomotives in existence, and the trains themselves incorporated numerous facilities never before available in any passenger service.

New Trains Created New Problems

While the design of the locomotives for this high-speed service presented difficult problems, the train itself brought many other new problems for which the Union Pacific had to do the pioneering.

With the Diesel locomotive no scheme was available for heating the train and small steam oil-fired flash boilers were installed for this purpose. As the length of the train increased the weight of the boilers, together with the water that it was necessary to carry for the entire distance between watering, became very heavy. On our last two new streamline trains, the City of San Francisco and the City of Los Angeles, the cars were equipped with electric heaters and about one-half of the heating is supplied by electricity. It was found that less than 45 kw. per car is necessary to heat them properly. Thus far the experience in electric heating indicates that

possibly less fuel oil will be required than to heat the train by steam.

At the time the first streamline trains were designed, air conditioning of railroad cars was just beginning. There were then practically no air-conditioned passenger cars in a transcontinental train service. This presented serious problems as it was necessary to provide adequate air conditioning through desert country where temperatures of more than 120 deg. F. were not uncommon.

The use of electricity for heating, air conditioning, lighting, ventilation, water cooling and other apparatus on these trains indicated that electric power totaling about 50 kw. per car was necessary for auxiliary train service. Heretofore the lighting and such other electric current as was used on the conventional passenger cars amounted to only 2 to 4 kw. per car and this was supplied by a storage battery charged by a generator belted to one of the car axles. With the power requirements increased to about 50 kw. per car, a twelve-car train required 600 kw. in auxiliary power, as much power as the main engine of the first streamline train developed.

This large amount of power considerably increased the tractive force necessary to haul the cars where axle generators were used and nullified to some extent the efforts of the car designers to provide light-weight cars. Consequently, it was decided to provide a Diesel-electric power plant at the head end of the train. In some of the earlier streamline trains, this auxiliary power plant was located on the locomotive, but as the trains increased in length and the power requirements became greater, it was finally decided to place the auxiliary power plant in the baggage car.

5,000 to 6,000 HP. Required

For long high-speed transcontinental runs, streamline trains require a locomotive of between 5,000 and 6,000 hp. Thus far the variable-speed Diesel-electric locomotive is the only type of motive power which has been able to render this severe service for the entire run. The fuel consumption of the Diesel-electric locomotive is materially less than that used by standard steam locomotives. It is not possible, at this time, to give accurate figures on the repair expense of the Diesel locomotive, for considerable expenditures have been made for improvements and experimental work which cannot be separated accurately from the regular maintenance.

We have recently purchased a number of modern steam locomotives which are an improvement over the older steam locomotives. The use of alloy metals in the side rods and reciprocating parts has materially reduced the counterbalance problems. However, to obtain power comparable to the Diesel locomotive, the axle loads have to be made much greater than is necessary with the Diesel locomotive.

In our search for a suitable and economical high-speed locomotive, we are also building, and will soon place in operation, a steam-turbine-electric locomotive which will be the first of its type ever built. This is a two-unit locomotive with 2,500 hp. in each unit. This locomotive is really a traveling steam electric-generating power plant with all the refinements of the modern central stations. The boiler plant on each unit consists of an oil-fired high-pressure boiler with superheater, economizer and air heater built in one compact unit and located in the center of each unit of the locomotive. The steam is to be generated at 1,500 lb. pressure and with a total temperature of 900 deg. F. The output of each boiler is to be 45,000 lb. of steam per hour.

Steam is to be piped from the boilers to a main turbine which is geared to an electric generator. This main turbine is a multi-stage cross-compound type and operates at constant speed. The exhaust steam discharged from the low-pressure turbine is to be piped back through the locomotive to an air-cooled condenser where it will be condensed and allowed to flow by gravity to the hot well. Thence it is to be pumped back through closed feed-water heaters to the boilers. By this arrangement, it will not be necessary to haul a large heavy tender of water.

The locomotive is to weigh about 500 tons. The weight on each driving axle will be about 57,000 lb. The tractive force at starting will be about 162,000 lb. and the continuous tractive force with normal forced ventilation will be about 61,200 lb. The cab and general outside appearance of each unit will be very similar to the latest streamline-train locomotives of the Union Pacific.

It is expected that the fuel cost of the steam-turbine-electric locomotive will be at least as low and will probably be lower than for the Diesel locomotive. The thermal efficiency should not be as good but the cost of the lower-grade fuel oil that will be used on the steam-turbine locomotive, will make up for this. The lubrication cost should be lower. The repair cost should also be low and may be materially less than for the Diesel locomotive.

Mediation of Wage Cut Begun

MEDIATION of the railroads demand for a 15 per cent reduction in wages was begun before the National Mediation Board at Chicago on August 11. According to a statement issued by the Mediation Board at Washington last week, all three members of the board, Dr. William M. Leiserson, chairman; Otto S. Beyer and George M. Cook, plan to participate as mediators. The services of the board were invoked after negotiations between the Carriers Joint Conference Committee and the Brotherhood of Railroad Trainmen were terminated on August 3, and with the Railway Labor Executives Association on August 4. The negotiations with the trainmen had been in progress since July 18 and with the other brotherhoods since July 20.

One of the first questions to be decided is whether the nineteen brotherhoods involved will be dealt with as one group or two groups as during the negotiations to date the trainmen elected to act independently of the other eighteen labor organizations.

Dr. Leiserson is not new to the problem of these groups for last fall when the five operating brotherhoods demanded an increase in wages, he acted as the mediator. At that time mediation lasted five weeks, and ended in the granting of an increase in wages. This time, management is asking for a reduction in wages and nineteen instead of five brotherhoods are involved.

In accepting the application for its services, the board, in a telegram to H. A. Enochs, chairman of the Carriers' Joint Conference Committee, on August 5, said, "the National Mediation Board has this day received and accepted application for its services from H. A. Enochs to mediate a dispute regarding a request of the carriers for changes in rates of pay which have been under ne-

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Bus and Train Make Convenient Connections at Bakersfield Station

Santa Fe Begins Co-Ordinated California Service

Streamlined trains and air-conditioned buses combine to provide fast San Francisco-Los Angeles schedules

ON July 1, the Atchison, Topeka & Santa Fe inaugurated an unusual rail-highway co-ordination project, in connection with its new fast schedules between San Francisco and Los Angeles. In this service, passengers are handled between the new downtown station of the Santa Fe in San Francisco and the San Pablo station in Oakland by means of buses operating over the Bay bridge, as described in the *Railway Age* of February 26, page 384. Between Oakland and Bakersfield, two "Golden Gate" trains operate, each making a round trip daily. At Bakersfield, passengers transfer to high-speed buses for transportation over the Ridge High-Gear highway into Los Angeles, where connection is made with buses and trains for San Diego and intermediate points. In addition, having secured authority to operate intrastate in California, the Santa Fe Transportation Company has inaugurated a number of through and local bus routes between San Francisco and Los Angeles, and between Los Angeles and Needles, as well as several local routes serving branch line territory in the San Joaquin valley, in the vicinity of Fresno.

First Month's Results

The new buses and trains were placed on exhibition throughout the San Joaquin valley prior to July 1, and were visited by more than 150,000 people. In some small towns, the visitors exceeded the number of local inhabitants. The care with which the schedule was worked out is indicated by the fact that the two south-

bound daily trains made a 100 per cent on-time performance during their first month's operation and the two daily northbound trains were late only three times, the maximum delay being 12 min.

The public response to this service has been gratifying. The trains and buses have been excellently patronized and the Golden Gate equipment has been running with capacity loads on most days.

Schedules

The new schedules provide for four train-bus co-ordinated runs in each direction daily, two by streamline trains and two by steam trains. Each of the Golden Gate streamliners makes a round trip between Bakersfield and Oakland daily, a total of 626 miles for each train. One train leaves Oakland at 8:30 a. m., and arrives at Bakersfield at 2:20 p. m., connecting with a bus that arrives at Los Angeles at 5:45 p. m. Returning, this train leaves Bakersfield at 4:15 p. m., making connection with a bus leaving Los Angeles at 12:55 p. m., and arrives at Oakland at 10:05 p. m.

The other Golden Gate train leaves Bakersfield at 9:35 a. m., making connections with a bus leaving Los Angeles at 6:15 a. m., and arrives in Oakland at 3:25 p. m. It then leaves Oakland at 4:30 p. m., arriving at Bakersfield at 10:20 p. m., connecting with a bus that arrives at Los Angeles at 1:35 a. m. The train connection bus service between Oakland and the downtown station in San Francisco takes half an hour or less, and the complete co-ordinated run between Los

Angeles and downtown San Francisco is made in 9 hr. 35 min. and 9 hr. 45 min. respectively.

This means that the overall schedule between San Francisco and Los Angeles, including transfers from bus to train and train to bus at Bakersfield and Oakland, is made at an average speed of 45.5 m. p. h. The streamlined trains make the run between Bakersfield and Oakland, 313 miles, with intermediate stops at Stockton, Merced, Fresno and Hanford, in 5 hr. 50 min., or at the rate of 53.6 m. p. h., and the buses make the run of 116 miles between Bakersfield and Los Angeles, with 10 intermediate stops, in 3 hr. 50 min., or at the rate of 30.1 m. p. h.

Additional Services

In addition to the Diesel-electric trains, two steam trains make bus connections for through service in each direction daily. There are also four through bus schedules in each direction daily. Four schedules in each direction daily between Los Angeles and San Diego, including two trips each way by the Diesel-electric San Diegan, as well as five through bus schedules each way, supply close connections for San Francisco-San Diego passengers.

Tickets issued by the railway or by its subsidiary, the Santa Fe Transportation Company, for intrastate travel in California, are good on either buses or trains or both, and a passenger may use either means of transportation he desires between any two stations. The fare is on the basis of 1½ cents per mile for either train or bus, sample fares being \$6 one way or \$10.80 round trip, between Los Angeles and San Francisco, and \$1.80 between Los Angeles and San Diego, or \$2.50 round trip, with special week-end round trip fares of \$.2.

Air-Conditioned Highway Equipment

The buses used in the Bakersfield-Los Angeles service as a co-ordinated part of the through runs between Los Angeles and San Francisco, are part of a fleet of modern units purchased from the A. C. F. Motors Company. This fleet consists of 45 36-passenger, underfloor-powered streamlined parlor coaches which are smooth-riding, air-conditioned and with completely dust-proof interiors.

The body and chassis are built as a unit, of high-

strength aluminum alloy, except some parts which are of alloy steel. This sturdy construction is intended to eliminate the expense of body maintenance. The underframing is also of aluminum alloy, except the engine supports and the cross members to which springs are bracketed. These members are alloy steel to obtain greater strength and resistance to fatigue. The Hall-Scott 180 h. p. horizontal engine and all the mechanical units are installed with special care to insure easy access for efficient inspection and maintenance.

The roof is aluminum alloy, insulated against heat and rumble, and all joints are closely riveted and sealed to give the maximum protection. The floor is level for the complete length of the coach, and is constructed of laminated wood sealed at the edges and covered with linoleum. All the floor joints are permanently sealed. Two steps are built into the coach body and the step treads are of anti-slip running-board matting. As an additional safety feature all buses are equipped with Bendix-Westinghouse air brakes, which also provide the air for the pneumatic doors.

The wide side windows and the rear windows are glazed with shatterproof sheet glass while the windshield and front corner sash are glazed with shatterproof plate glass. The windshield is in two parts, set V-shape in pressed metal frames. All glass and the sash are set in pressed metal panels to insure an accurate fit and all glass is set in rubber to prevent leakage or drafts. Sashes are stationary except at the front and rear corners, which hinge out, and a driver's signal sash. The pneumatically operated sedan-type front door swings outward with a clear opening width of 28 in. and headroom of 72 in. The emergency door at the rear left side is equipped with a 3-point manually-operated lock and a signal at the driver's position to show when it is open.

The interior is decorated in three colors. The ceiling is panelled in composition board and covered with carpet above the luggage racks. It is constructed of fluted aluminum between the luggage rack supports, except the center light band, which is pressed aluminum having flush-mounted aisle lights. The entire ceiling is designed for sound absorption.

The interior luggage racks are of the solid type, lined with ribbed matting and extending along both sides of the coach. The racks are ample to hold large suitcases, and still provide sufficient headroom for passengers seated under them. An entirely enclosed baggage com-



The New Santa Fe Fleet Represents the Most Modern Highway Transportation

partment under the rear seats and rear section of the flooring is easily accessible through two large doors set flush in the rear end and two doors set flush in the sides. Substantial catches hold these doors open or closed as desired. Each passenger is allowed 100 lb. of baggage.

All of the seats recline, including those in the extreme rear, and there is no wheelhousing interference with any seat. The seats are wide individual chairs, adjustable to several positions, and are fastened directly to the floor, eliminating all platforms and ramps.

The interior lighting is in keeping with the decorative scheme, and consists of 5 flush-mounted aisle lights over the center aisle and 17 post lights to provide illumination for each seat. A step lamp, recessed in the riser of the stepwell and protected by a heavy lens, is lighted only when the door is open. The exterior lighting consists of 2 double-beam 21-21 candle-powered headlamps, 3 identification lamps at each end of the coach, 2 clearance lamps on the front corners of the body and 2 at the rear corners, 2 tail lamps, 2 stop lights, and 2 illuminated panels for the company insignia in the rear baggage doors.

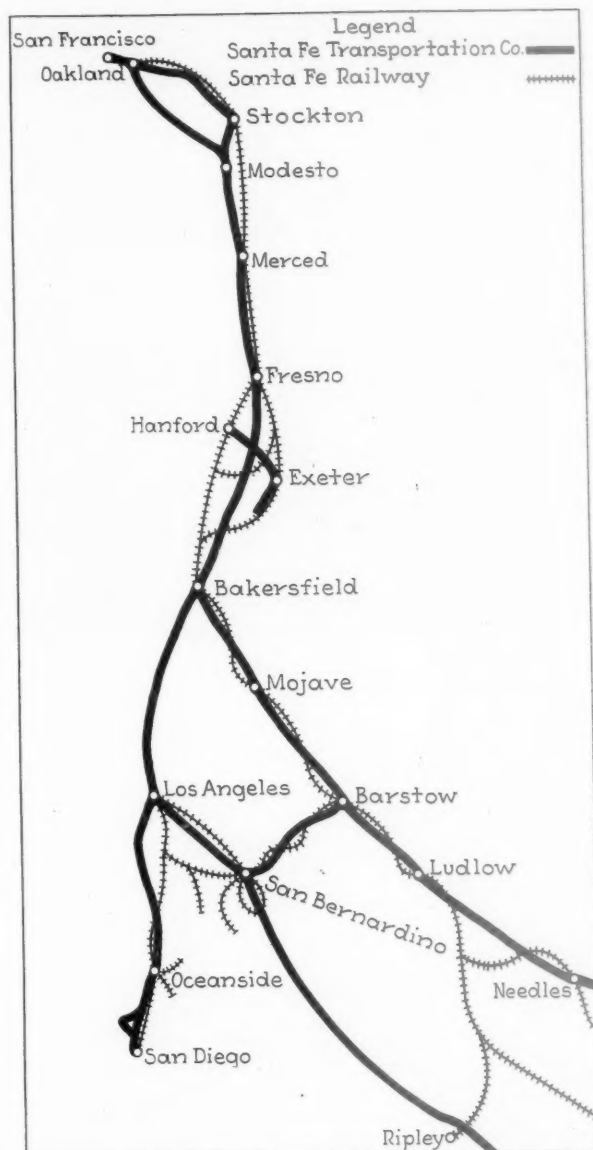
Ten cubic feet of fresh air per passenger per minute is drawn into the coach by fans in the roof above the driver. This air is mixed with 1,100 cu. ft. per minute of recirculated air, is cooled or heated as required and circulated through the bus. Two additional heating units are provided on the floor, one at the rear and one in the center. The air-conditioning equipment was designed especially for the Santa Fe fleet and cleans, cools, dehumidifies and circulates the air, giving a complete change of air every four minutes. A condensing unit is located under the floor on the right side, and an air-conditioning unit in a compartment in the front hood over the driver's seat.

These coaches are identical with those to be used in the connecting bus service between Los Angeles and San Diego. A further fleet of A. C. F. buses is used in the train connection coach service across the Bay bridge between Oakland and San Francisco.

The Golden Gate Trains

The addition of the two trains between Oakland and Bakersfield in this service brings the total number of streamlined trains put in service by the Santa Fe this year to 15. The Golden Gate trains are powered with 1,800-hp. Diesel-electric locomotives, which may be coupled for multiple-unit operation, built by the Electro-Motive Corporation. Each unit contains two 900-hp. General Motors two-cycle Diesel-electric engines, controlled simultaneously by the one throttle. Each is a V type, 12-cylinder engine, geared for a top speed of 117 m. p. h. These locomotives are exact duplicates of those built by the Electro-Motive Corporation for the other trains, which have been described in detail in various issues of the *Railway Age* this year, and the appearance, design and coloring of the new locomotives follow the distinctive red and silver motifs used for the other locomotives of this type now in Santa Fe service.

The cars were constructed by the Edward G. Budd Manufacturing Company, and these, too, are of the same type as those for previous trains, already described in *Railway Age*. Each of these trains includes five lightweight, stainless-steel cars—two regular chair cars, one lunch counter-tavern car, one baggage-chair car, and one parlor-observation lounge. The seating capacity of each train is 217 persons. The lunch counter-tavern car is the longest car in the train—over 83 ft., with an interior over 9 ft. wide. The long counter provides seating space



The New Line-Up of Co-Ordinated Santa Fe Service in California

for 13 diners on large stools, while the tavern section of the car has accommodations for 24 passengers, with 4 tables with opposing type seats for the accommodation of 4 people at each table, and 8 individual chairs, each equipped with an extended arm on which beverages are served. The baggage-chair car contains the conductor's office with a desk and chair, and reclining chairs for 36 passengers, in addition to the baggage space, while each of the two chair cars seats 52 passengers. The parlor-observation car contains 40 chairs, and a large ladies' lounge with 4 chairs and a dressing table.

Mediation of Wage Cut Begun

(Continued from page 248)

gotiation and not settled in conference. A separate application has also been received from A. F. Whitney, in behalf of the Brotherhood of Railroad Trainmen. The board has set August 11 for beginning mediation in Chicago. We will get in touch with each of you upon our arrival on August 11."

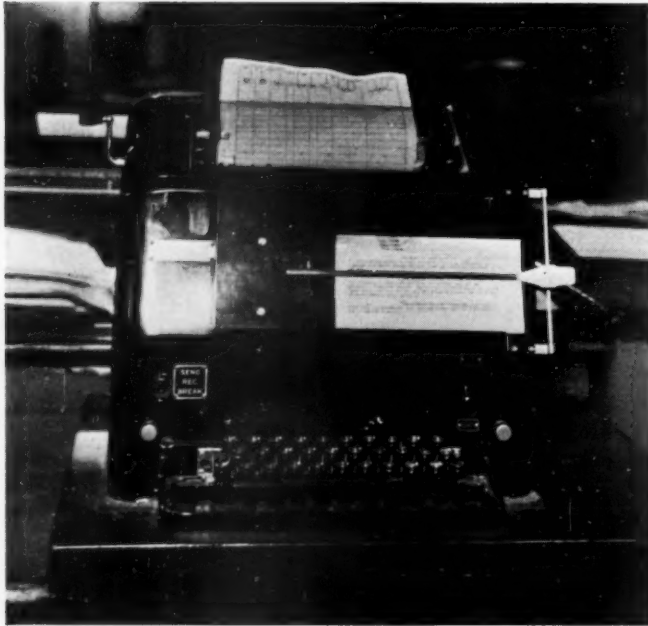


Fig. 1. Machine Used in Yard Office for Both Sending and Receiving

AN interesting feature of the installation of printing telegraph apparatus on the Denver & Rio Grande Western is that practically all of the important yards and offices on the railroad have been equipped in one program. This communication system is used for messages and for wheel reports of freight trains.

Heretofore, telegraph has been used to transmit messages and a limited amount of information as to the consist of trains. Yard clerks and freight train conductors handled the train lists in the usual manner, but delays in yards and terminals resulted because insufficient information was available prior to the arrival of the trains. The traffic department needed more detailed information as to the location of loaded cars in transit to answer inquiries from shippers, this being especially true with reference to cars of fruit and vegetables which the shippers desired to divert enroute. The old method of handling even a meager amount of information concerning consists by the Morse telegraph was entirely inadequate to meet the requirements of modern rail practices.

Interconnected Offices

The relay office in the general office building in Denver is the center of activities of the printing telegraph system. Printer equipment in this office is connected to five separate circuits that extend to similar apparatus for receiving and sending in Salt Lake City, Utah, Grand Junction, Colo., Salida and Pueblo, and St. Louis, Mo. In the Salt Lake City office, a separate set of equipment is operated over a circuit to the D. & R. G. W. yard office at Ogden, Utah, and a similar circuit and equipment are operated between Salt Lake City and the Southern Pacific office at Ogden. A third circuit is operated between Salt Lake City and Roper yard, which is located east of the station at Salt Lake City. At Pueblo, two circuits are operated between the yard office and the Pueblo office. These circuits between the offices were provided without adding any new line wire, but by rearranging the existing circuits. A schematic diagram of the circuit layout is shown in Fig. 3.

In brief, a telegraph printer system may be described,

Printing Telegraph System

Installations at four main offices and four yard offices are interconnected to handle wheel reports and messages, thus facilitating operations

in so far as the results are concerned, as a means by which typewriting is transmitted by wire. Several types of machines, to serve different purposes, are required to make up a complete system, as used on the D. & R. G. W. A typical printer set, as used in the relay offices such as Denver, Pueblo, Grand Junction and Salt Lake City, consists of four units of equipment mounted on a table, as shown in Fig. 1. The machine at the right, a perforator, with a keyboard similar to that of a typewriter, is used by an operator. This machine does not type the message but punches holes in the paper tape, thus recording each character. The small machine next to the left, is the tape transmitter. When a tape, with a message punched in it, is fed through this machine, the message is automatically placed on the wire in the form of code, which will reproduce the message in the receiving office. By using one machine to punch the tape and another to transmit the message, an operator can continue to punch the tape regardless of whether the line is available, and, when the line is ready, the tape transmitter will send the message at the rate of 368 characters, or 58 words, per minute. The third machine to the left in Fig. 2 is a page-printer receiving machine, which receives messages and types them when they are being sent by the office at the other end of the circuit. The fourth machine to the left is a reperforator, by means of which a message can be received in the form of a perforated tape. Use of this machine in conjunction with the page-printer permits a message to be received both as a perforated tape and as a typewritten page.

In the yard offices, such as at Pueblo, Ogden and Roper, the required equipment is complete in one machine, as shown in Fig. 1, which can be used to receive a message in typed page form and can also be used to transmit a message directly from the keyboard, during which operation the message being sent is also typed on the machine.

How Equipment Is Used

To illustrate how this equipment is employed, consider a train being made up in Roper yard. The yard clerk

ap System on the D. & R. G. W.

types the wheel report of the train on his machine, at the same time sending the complete message to the office at Salt Lake City, where it is received in tape as well as page form. The clerk at Roper yard makes as many carbon copies of the wheel report as are needed for the train conductor and the yard master for records. In the meantime, the tape received at the Salt Lake City office is being run through the tape transmitter to send the message to Denver, where it is received in typed page form as well as in tape. The Denver office tape is then run through a sending machine and the message is transmitted to Grand Junction, where it is received in page form. If the train is to be routed via Pueblo, the Denver office tape is also run through a sender which transmits the message from Denver to Pueblo, where it is received in page form. At Denver, Grand Junction and Pueblo, copies of the typed wheel report are made on Ditto machines, so that operating officers, yard masters, traffic representatives and others concerned, may be supplied with copies. The original typed sheet made by the yard clerk at Roper yard is furnished to the conductor of the train as his train list. By the time the

train pulls out of the yard, the same information is in Denver and on its way to, or received at, Grand Junction or Pueblo. The same general procedure is in effect for westbound trains leaving Denver or Pueblo.

The printer equipment at Grand Junction serves a purpose somewhat different from that at the principal terminals such as Denver, Pueblo and Salt Lake City. Between Grand Junction and Denver, the D. & R. G. W. now operates over two routes. The original line extends from Denver via Pueblo through the Royal Gorge to Dotsero, which is 118 miles east of Grand Junction. The newer route extends west from Denver through the Moffat tunnel and then follows the Colorado river to a junction with the previous line at Dotsero. Traffic for both routes is handled on the same track between Dotsero and Grand Junction. In many cases, westbound trains from Denver and Pueblo are consolidated at Grand Junction, and likewise eastbound trains are in some instances remade at Grand Junction for movement over the two routes to Denver and to Pueblo. When any major changes are made in the make-up of a train at Grand Junction, a complete new wheel report is trans-



Fig. 2. View Showing One of the Complete Sets of Equipment in the Denver Office. At the Right, a Keyboard Perforator, and Next in Line a Tape Transmitter, Page Printer Receiving Machine, and to the Extreme Left, a Reperforator

mitted to Denver for re-transmission to Salt Lake City and to other offices interested.

In addition to the printer equipment used exclusively on the D. & R. G. W., one complete set of apparatus is provided in the Denver office for operation over a circuit to a set of apparatus in the Missouri Pacific office at St. Louis, Mo. By means of this equipment, the D. & R. G. W. sends the M. P. the wheel reports of trains to be delivered to the M. P. at Pueblo, and likewise the M.

wide and 19½ in. long, several sheets being required to list a complete train.

Function of the Reproducing Machines

Only one copy of a message or wheel report is made on the page printer receiving machines used in the four relay offices. Each of these relay offices is equipped with a Ditto reproducing machine that will accommodate

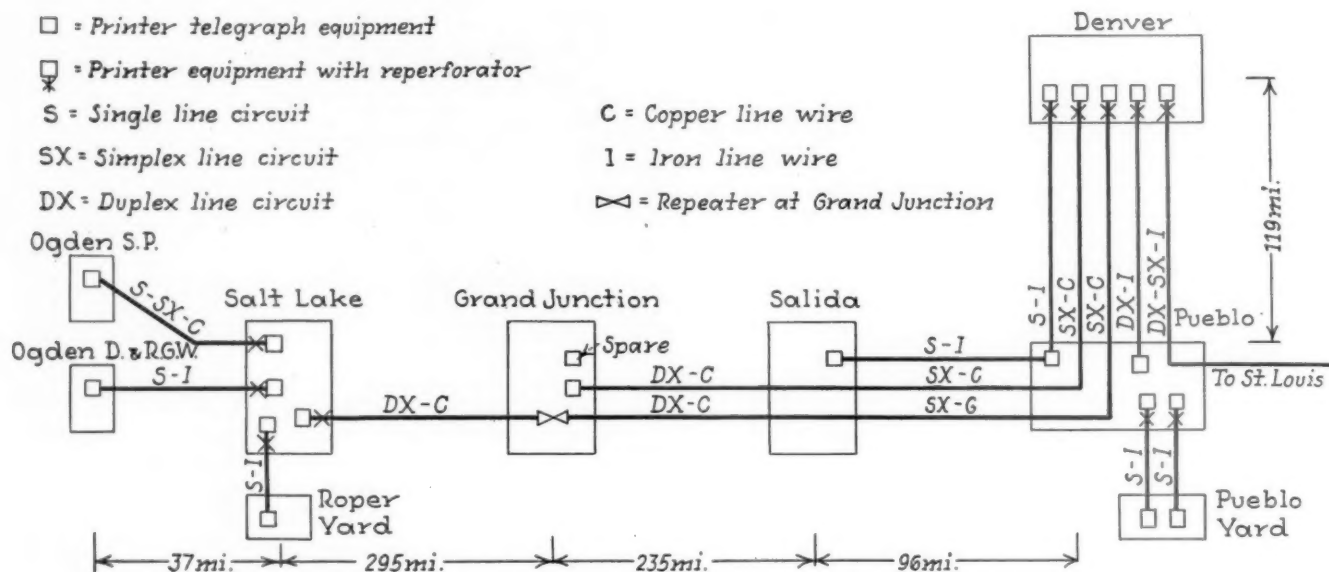


Fig. 3. Schematic Diagram of the Line Circuit Arrangements and Location of Printing Telegraph Apparatus

P. keeps the D. & R. G. W. advised concerning cars which are to be delivered to the D. & R. G. W. at Pueblo.

Wheel Report Gives Complete Information

The wheel report, as handled by the telegraph printer system on the D. & R. G. W., gives complete information concerning each train. The first line gives the train and locomotive number, the names of the conductor and engineman, the name of the town of departure and the month, day, year, hour and minute of departure. Two, and if necessary three, lines are used to give information with reference to each car, the cars being listed in the order in which the train is made up from head to rear end. Letters, abbreviations and numbers in certain positions in these lines each convey information readily recognized by employees concerned. For example, referring to the typical entry reproduced in the illustration: The first line shows that Pacific Fruit Express car No. 100335, a refrigerator car, on the 12th day of the month, left station 743 (Salt Lake City) with 16 net and 54 gross tons; it originated at Los Angeles, Cal., and is going to Grand Forks, N. D. The second line directs that the car is to be set out at Fargo, N. D., to be partly unloaded. In the third line, GV33 is the symbol number assigned to the load upon its receipt from a connection by the D. & R. G. W.; next, that the car was received by the D. & R. G. W. at 11:30 a. m. on the 12th day of the month, that the lading was cauliflower; the VCD means that the vents are to be left closed to destination; the Nash Finch Company was the consignee; and east of Denver, the car is to be routed via the Chicago, Burlington & Quincy and the Great Northern. The entries for about 24 cars are listed on a sheet 8½ in.

sheets up to 8½ in. wide and 19 in. long. When a message or wheel report is made up in an office or received on a printer, the message is typed through a copying ribbon and a Ditto machine is used to make as many copies as may be required for various purposes. In the yard offices at Ogden, Roper and Pueblo, the combination sending-receiving machines will make as many as eight copies by using carbon paper. Each office is equipped with a time stamp machine, which includes a clock arrangement that sets the stencil to print the month, day, hour and minute. This machine is used to stamp each message and wheel report when received.

Circuit Arrangements

The circuits between offices for the operation of the printer system were all arranged for without adding any line wires. Both simplex and duplex equipment were utilized. One copper wire extends from Denver to Salt Lake City, and another from Denver to Grand Junction. A single circuit on iron wire extends between Denver and Salida. The Denver-Salt Lake City printer circuit is 743 miles long, on No. 9 copper wire, and a repeater set in this circuit is located at Grand Junction, 450 miles from Denver and 296 miles from Salt Lake City. The normal line current on a duplex printer circuit is 50 m.a., and normal line current on a single circuit is 60 m.a.

Referring to the illustration of the equipment in a typical printer set, it will be noticed that the duplex terminal apparatus, including the milli-ammeter, is located on the table in view of the operator, rather than elsewhere in the office. This is done so that the operator can observe any "swings" or unusual line conditions

on the circuit and can balance the circuit as required. Also, he can see by the milli-ammeter when a line circuit "goes open" or is grounded, i.e., fails. This feature is especially desirable in printer service; otherwise a transmitter might be sending "into the air", i.e., on a circuit that is out of service, for an extended time before the condition would be noted.

Messages sent in either direction between offices are numbered consecutively, beginning with No. 1 at 12:00 a. m., and the operators at the two ends check numbers every few hours to be sure that all messages sent have been received. During light load periods, the motor for operating a page printer is not in operation, but is started when the first impulse of an incoming message is received. This control feature reduces the wear on the motor and other parts of the device, and reduces power consumption as well. Once started, a motor continues to run, even after the messages are all received. For this reason, when a motor is started automatically, a red lamp is lighted to warn the operator that a message is being received and that he is to shut off the motor when the message is completed. Another interesting feature of the installation is that the direct current for the operation of the printer equipment and line circuits is sup-

length or number of copies made, is counted as one message. Taking the Salt Lake City office as an example, the maximum number of messages, including those sent and received, previously handled in a peak traffic period of one week was 4,267, an average of 111 per day per operator. With the printing telegraph system, this office handled a maximum of 9,639 messages in one week, averaging 201 messages per operator per day. On the D. & R. G. W. a diversion message ordering a change in the routing and destination of a car is very important. With the previous practice of using Morse telegraph, these diversion orders were given preference, but on an average, six hours were required to get such a message through from Salt Lake City to Denver. Now the average time for handling such a message is 10 minutes.

The benefits accomplished by the printing telegraph system are important in several respects: Train service and message traffic have been expedited; inquiries from shippers are answered promptly; the message capacity of the communication system has been increased at least 100 per cent because of the higher speed of transmission and the automatic features of the operations; the same line wires formerly used for the Morse telegraph are

SL	EAST	ONE
CS-45 1509 CARMOFY MC ARDLE SL	12-12-37 1045P	
DRGW 01137 CAB 12 743	22	
CREW		
PFE 100335 R 12 743	16 54	L ANGELES GRD FORK ND
STOP FARGO PT UNLDG		
GV33 1130A12 CFLOWER	VCD	NASH FINCH CO CBQ GN
PFE 33302 R 12 743	18 44	OKLD BKLYN NY
STOP S PAUL PT UNLDG		
WD61 310P12 CANDY	VCD	CARDINET CANDY C-O BUSH TERML RI NY
PFE 93293 R 12 743	18 45	REDLANDS DENVER
GV34 DO ORANGES	SV	ART JOHNSON BKG CO
PFE 32122 R 12 743	11 33	UIC LOGAN DENVER
GW295 1150P11 -6P740P12 CD MILK	VCD	BORDEN C-O WEICKER TSFR STG

Fig. 4. Reproduction of Sample Section of a Typical Wheel Report as Transmitted by the Printing Telegraph System

plied from mercury-vapor rectifiers rather than motor generators. The rectifiers are rated at 110 volts, 2 amp.

When the new communication system was placed in service, the various departments of the railroad soon learned that a new method of handling messages expeditiously was available, and as a result the message traffic increased about 85 per cent. Many communications which, of necessity, were handled formerly by mail, are now sent by wire, thus expediting important railroad business and saving the time of employees.

On this road each message, regardless of the number of addresses, and each wheel report, regardless of the

used by the new system; and no increase in operating expense for the new system is necessary.

The printing telegraph apparatus on the entire system was furnished by the Teletype Corporation, Chicago, and the installation was made by D. & R. G. W. forces under the direction of A. S. Hunt, superintendent of telegraph. The printing telegraph system is handled by the same employees who were formerly Morse telegraph operators. Some of these operators can now operate the keyboard tape perforating machines as fast as the transmitters will operate, i.e., at the average rate of 368 characters per minute.

Railway Labor Cost Per Unit of Traffic

WASHINGTON, D. C.

THE Interstate Commerce Commission has made public the latest of its Bureau of Statistics' studies of railway labor costs per unit of traffic, which adds data for the years 1936 and 1937 to the previous survey, reviewed in the *Railway Age* of August 15, 1936, page 252. The stated purpose of the study is "to review various averages obtainable from current statistics that throw light on the trend of railway labor costs per unit of railway service such as the car-mile and ton-mile."

The study occupies 11 mimeographed sheets, the first three of which are devoted to general comment and the remainder to four tables. Table I gives railway labor costs in cents or mills per unit of traffic for the years 1913 to 1937; Table II shows index numbers of the post-1926 costs per unit of traffic with 1926 taken as 100; Table III takes 1913 as 100 and does the same thing insofar as data on units of traffic are available; Table IV shows the trend of revenue per ton-mile, per ton originated and per passenger-mile as related to the 1913 base as 100.

Downward Trend Since 1920

While most of the general comment relates to a comparison of the base years (1913 and 1926) with 1937, the Bureau observes in concluding that the percentages for the intervening years "are of interest as showing the great increase in the average labor expense per unit of traffic from 1913 to 1920 and the almost uninterrupted decline since that time." It had previously noted, however, that the pay roll cost per car-mile in 1937 was 6.72 cents, "a slightly higher average than for any of the years 1933-1936, but lower than for the years 1918-1932." This 1937 cost was 83 per cent of that of 1926, although it is pointed out that "the reliability of such a comparison is somewhat affected by the greater per cent of decline in passenger-train car-miles than in freight-train car-miles, these percentages being respectively 20.73 and 17.17." The following comparison for groups of accounts "that can be definitely divided between services" are taken from Table II:

Item	Per cent which the 1937 average is of the 1926 average
Road freight labor expense per revenue ton-mile:	
(a) Based on freight proportion of accounts 392, 393 and 401	88
(b) Based on compensation of road freight employees in monthly wage reports	86
Road passenger labor expense per passenger-mile:	
(a) Based on passenger proportion of accounts 392, 393 and 401	109
(b) Based on compensation of road passenger employees in monthly wage reports	109
Expense for freight station employees per ton of freight handled	88
Expense for freight yard employees per ton of freight handled	100
Expense for passenger station employees per passenger carried	102
Expense for passenger yard employees per passenger carried	135

Before setting forth the foregoing, the Bureau explained that the average costs involved "are different from the wage costs per day or hour, concerning which information is found in current publications of this Bureau." Also, that "the change in labor cost per unit of railway service is the combined result of changes in hourly wage rates, productivity of labor and capital, and economy of management; over- or under-maintenance would also affect some of the averages." It is

further suggested that one interpreting the figures since 1931 should have in mind the 10 per cent wage deduction of 1932 and its gradual restoration between July 1, 1934, and April 1, 1935; and that last year's wage increases are reflected only in part in the 1937 averages.

Freight-Service, 1937 Compared with 1926

"For the freight service taken by itself," the foreword continues, "it appears that the pay roll expense per revenue ton-mile declined from 4.25 mills in 1926 to 3.57 mills in 1937, the latter being 84 per cent of the former. It may be noted that the expense for yard employees per ton of freight handled was nearly the same in 1937 as in 1926, although the expense for road freight employees per ton-mile was 12 per cent less. The difference in trend between road and yard averages may in part be explained by the loss of short-haul traffic which has diminished the tons handled more than the ton-miles, but the expense for freight station employees per ton declined to the same extent as the road expense per ton-mile. In this connection it may be noted that there has been little change in the ratio of yard expenses to road expenses between 1927 and 1937, from 50.2 per cent to 50.3 per cent.

"The fact that the passenger indexes above given are higher than the freight indexes is explained by the greater traffic decline in the passenger than in the freight business without a corresponding reduction in the terminal and train service maintained for passengers."

In commenting on the data showing the trend of unit revenues, the Bureau calls attention to the fact that in 1937 the averages per ton-mile and per passenger-mile were respectively 86 per cent and 61 per cent of the 1926 figures. It adds, however, that "the ton-mile revenue does not accurately reflect changes in the level of rates, being affected by a loss of short-haul traffic and other influences."

Next comes the discussion of Table III in which the averages are carried back to 1913. "Per car-mile for all services, loaded and empty," the Bureau says in this connection, "the labor expense was 33 per cent greater in 1937 than in 1913. If empty freight cars are excluded, the per cent of increase rises to 45. In explanation of the difference it may be noted that the percentage of empty freight car-miles was substantially greater in 1937 than in 1913. On a traffic unit basis, the increase in labor expense was 27, 32, or 36 per cent according to the construction of the traffic units total. Over so long a period as 24 years the change in the size of cars and in the length of haul affects the significance of such comparisons. The average freight car capacity was 38 tons on June 30, 1913, and 49 tons on December 31, 1937. The average haul was 260 miles in 1913 and 355 miles in 1937. As shown by Table IV, the revenue per ton-mile in 1937 was 30 per cent greater than in 1913. Per ton originated, the freight revenue was 71 per cent greater, reflecting the increased haul as well as rate changes. The revenue per passenger-mile was 10 per cent less."

THE LOTSCHBERG RAILWAY of Switzerland, a European pioneer in the use of heavy electric locomotives for freight and passenger service, celebrated its silver jubilee on July 15. The road, which connects Berne, Switzerland, with Brig, was opened to traffic in 1913. It involves a nine-mile tunnel in the Bernese Alps, the third largest of the Alpine tunnels. The road was the first international road to be operated by electricity, and its 4,500-hp. locomotives were the most powerful of their kind on the Continent until the St. Gotthard road installed its 8,500-hp. locomotives a few years later.

Communications . . .

"Feather Bed" Abolition Would Solve R. R.'s Difficulties

LOUISVILLE, KY.

TO THE EDITOR:

On July 23, in your editorial, "Government Reorganization and the Commission," in which you accused the Interstate Commerce Commission of wabbling, you stated: "When the proposal of shaking up this venerable body (the I. C. C.) was first broached many eloquent speakers sprang to its defense."

If my memory serves me right, *Railway Age* was among the first to rise to the support of the Commission. Now, six or eight months later, *Railway Age* itself has definitely wobbled and made a complete about-face by suggesting that the Administration reorganize the Commission.

Your editorial was precipitated by the seeming inconsistency of the Commission in granting all of the requested passenger fare increase and only about one-third of the freight rate increase sought by the carriers. The demand for the freight rate increase was, as you will remember, an admitted attempt to pass on to the shippers the burden occasioned by railroad management's "slip-up" in submitting to an increase in the already excessive wage scale of trainmen. This the Commission rightfully refused to do.

Reduce Costs, Not Raise Rates

The tendency of railroad management to make the Commission a scape-goat on which to pile all of its own shortcomings has long been evident, and such a procedure will never prove effective in putting the railroads back on their feet. The Commission knows, and you have so stated in your columns, that there must be a greater spread between railroad income and expenses. In the face of highway and waterway competition, the only practical relief that the carriers can reasonably seek is lower taxes along with a drastic reduction in operating costs.

It will require time to solve the tax problem; but the artificially high cost of operation, which is largely due to "feather-bed" working conditions enjoyed by trainmen, can be remedied by aggressive and determined action on the part of railroad management. At present speeds, train crews frequently cover a day's allotted mileage in about three hours; consequently, their hourly wage rates are enormous. In the light of this unfair condition, can there be any doubt of the proper course for management to resolutely pursue? And can *Railway Age* expect the Commission to saddle the shippers with rates sufficient to support this absurd condition, and thereby stifle commerce because the railroads themselves have failed, for one reason or another, to set their house in order.

Prosperity Lost on "Feather Bed"

There must be a way out. The unjust features of the "feather-bed" working conditions are principally due to the ruinous practice of paying trainmen on a mileage and/or weight-on-driver basis instead of a universal and publicly-understood hourly basis. If the practice of paying trainmen by the hour were instituted, railroad wages would then be comparable to other industrial wages; and public opinion would come to be a helpful factor in wage disputes.

Until railroad management aggressively takes the situation in hand and abolishes the mileage basis of pay, the railroads are going to continue to be burdened with high costs, high (but inadequate) rates, and a resulting low traffic volume. The Commission is surely cognizant of this dilemma; however, it is not its duty to thwart the prerogatives of railroad trainmen; nor would it be the duty of the Administration to take the Commission to task for courageously refusing to transfer more of the exorbitant costs of railroad operation to the public. Even so, Commissioner Eastman recently focused the spotlight of public opinion on high railroad wage scales, and, as is recorded in your magazine, was severely criticized by union officials for getting out of bounds.

The writer is not familiar with the provisions of the Railroad Labor Act; but after railroad labor rejects a proposal to

base wage scales on hourly rates, the railroads could give the proposed rates of pay widespread newspaper publicity, which would practically compel a mediator to give the roads a square deal.

The roads could publish a table something like the following:

Effective October 1:

	Northern States	Southern States	Western States
Locomotive enginemen ..	\$2.00 per hour	\$1.75 per hour	\$1.85 per hour
Locomotive firemen	1.50 " "	1.25 " "	1.35 " "
Conductors	2.00 " "	1.75 " "	1.85 " "
Brakemen	1.25 " "	1.00 " "	1.10 " "
Flagmen	1.25 " "	1.00 " "	1.10 " "

Full time employees will work a maximum of 160 hours a month, will be given a pension, will be allowed two weeks' vacation with pay equal to 1/25 of the previous twelve months' earnings, and will be granted passes over their company's line for themselves and dependents.

This seems a rather high scale, and it should meet with instant public approval. Potentially (on the basis of the Pennsylvania's paying electric locomotive operators \$320 per month for ten days' work), the adoption of such a pay base could reduce operating wage costs to about one-third of their present magnitude. Think of it! Actually, in putting such a plan in practice, the roads would want to lower the retirement age temporarily so as not to displace the younger "old heads." Nevertheless, the plan should save about half the present operating wage costs, and should go further than any other single move toward rehabilitating the railroad industry.

INTERESTED SPECTATOR.

More for All When Each Produces Less?

BLUEFIELD, W. VA.

TO THE EDITOR:

I am a regular reader of *Railway Age* and "Labor" and while I understand very well that *Railway Age* speaks for the railroad managements, and "Labor" speaks for the railway labor executives, I regret that there is so much criticism and apparent hard feelings existing between the two factions. I am of the opinion that much more good would be accomplished for the railroads as a whole were these two factions to consolidate their efforts and pull together for the mutual benefit of all.

The editor of *Railway Age* appears to be very critical of the labor executives for their failure to fall in line with the managements' plan to reduce wages. Surely the editor has not forgotten that effective February 1, 1932, the railway labor executives accepted for the employees a 10 per cent deduction in wages with the distinct understanding that the money so deducted would be used to employ more men, and that there would be no further cuts in wages during the effectiveness of the deductions and that was limited to one year, and the result was that men continued to be cut from the railroads to a much greater extent than they had been cut before, and salaries of individual railroad positions were slashed heavily beyond the 10 per cent deduction.

In view of that experience I am unable to understand how the editor of the *Railway Age* could expect the labor executives to fall into another trap. Also the *Railway Age* criticizes so much the mileage basis of pay for train service employees. If my information is correct the mileage basis for paying train service employees was established by the railway managements in the early days of railroading when the crew was paid by the trip regardless of how many hours it would require to make the trip. Then after the railroad management speeded up the movement so that the trip can be made in three hours instead of twelve, why should there be any complaint about paying the train crew for the full day's service?

There is no doubt much remodeling to do of the rules of the train service employees in other respects; for instances, the rule requiring that certain train service employees must make 38 days or more per month before they can be required to divide work with other employees. Surely this should be cut down to the six-day per week standard, and certain conditions under which

employees claim and receive a full day's pay for only an hour or so work outside of their regular work should be corrected to a justifiable basis, and made so clear that no necessity would be found to put the interpretation of such rule before a certain board. I am of the opinion that there will be a great loss to certain employees who have taken money unjustly from the railroads under certain conditions that have been brought to my attention. I am sure that we will reap what we sow, and as we sow. Some individual might take unjustly a payment from the railroad, but will lose as much as one hundred times as much as he takes unjustly.

It is impossible for the railroads to prosper except to the extent that other industries prosper. Therefore the main thing now is to get back to the law of cause and effect. This depression did not happen. There was a definite cause for it, and that cause still exists and as long as the cause remains the depression will remain.

Of course the spending of billions of dollars by the government as is being done now will increase business, and the railroads will get the benefit of it, but how long can the government keep the spending program up? It is my understanding that already the present Administration has spent more than nineteen billion dollars for relief purposes, all of which would have been unnecessary had all wage earners been furnished full employment six days per week at a good wage. It takes a purchasing power in the hands of the great mass of wage earners to make prosperity.

Had the six-hour basic day been established in all industries not later than 1926 we would not have had this depression. However, I am of the opinion that the six-hour basic day would not answer the purpose at this time, but what we need now is a basic four-hour day, six days work per week at a wage not less than is now being paid for the longer work day.

The railroads can look forward to much better earnings the latter part of this year due exclusively to the government spending program and the wages and hours law. The stock market has already started forecasting better business for the last half of 1938.

PERRY S. GRAHAM.

[We agree fully with our correspondent's plea that railroad managements and the labor organizations ought to be co-operating instead of combatting one another. He is mistaken, however, when he imputes to us "hard feelings" against the railway labor executives. Our disagreement with them is purely on questions of fact, involving no "feelings" whatsoever. One does not dislike a man because he says the world is flat. One merely calls his attention, in sorrow rather than anger, to the fact that scientists do not agree with him. Similarly we merely call the attention of the labor executives to the fact that economic scientists do not support them in their superstitious beliefs as to the conditions which promote prosperity.

As for the 1932 wage deduction—it is an undeniable fact that that deduction, while it did not put a complete end to the furloughing of employees, made the furloughing much less severe than would have been necessary had the deduction not been accepted. Proof of this is to be found in the present status of railroad employment when, since the unions have refused to accept a pay deduction, forces have had to be reduced below the levels of either 1932 or 1933. A wage reduction is, therefore, quite clearly no "trap" as far as many younger employees are concerned, but rather the salvation of their jobs.

Train service mileage wages are analogous to "piece work" in industry. When a company paying by piece work spends millions of dollars for new machinery enabling an employee to turn out more product without any more effort or time than he expended before, naturally the piece work rate is changed, and more product is expected per employee per hour. This is what has happened in train and engine service—and yet the piece work expectancy has not been changed.

This is unfair to the people who have saved their money and invested it to provide the better cars, locomotives, tracks and signals which have made higher train speeds possible and who are now getting nothing on their investment. It is not only unfair to investors, it is suicidal for railroad employees—because the railroad industry cannot continue to provide jobs without an inflow of new capital, and capital will not go to work for nothing any more than employees will. It is also unfair to main-

tenance employees, clerks and other railroad workers who have contributed as much to higher speeds as have the train and engine service employees—and yet *their* hours have not been shortened.

If our correspondent can explain to us how everybody can have greater riches in things to use and wear and eat when everybody goes on part time and produces less than he does today, as he urges, then maybe we can sympathize with his advocacy of the 4-hour day. And why stop at four hours a day? Why not make it an hour or less, finally achieving perfect prosperity by having everybody cease working entirely? True "purchasing power" increases when production per person increases, not when it is diminished. EDITOR.]

Says Jersey Central Was Pioneer in Use of Heavy Rail

NEW YORK.

TO THE EDITOR:

Heavy rails weighing up to 152 lb. have received increasing application in this country in recent years and the question has naturally been raised as to which railroad was first to use rails of the heavier sections. My own recollection is that the Central Railroad of New Jersey was the first railroad in the country to use rails weighing as much as 135 lb. and to verify this belief I addressed an inquiry to William Twining, now retired, who was formerly engineer maintenance of way of the Lehigh & Susquehanna division of the Jersey Central. It was my recollection that 135-lb. high-carbon rails were introduced on Mr. Twining's territory during his period of service. In his reply Mr. Twining wrote in part as follows:

"You will no doubt recall the period some 30 years or more ago when we were trying out various kinds of 90-lb. rail in an effort to develop a rail that would give satisfactory service under the stresses imposed by increased wheel loadings and by changes in locomotives. Experiments were conducted with rails of various alloys, such as chrome-nickel steel, nickel steel, rolled manganese steel, etc., these various alloys being used in every reasonable combination and proportioning of the elements involved. Also greater attention was given to mill practice. However, our efforts with 90-lb. rail were ineffectual. Moreover, the addition of 10, 15, or 20 lb. to the old rail section was not the answer—rail on curves continued to wear badly and many were broken or developed defects.

"Finally engineers, metallurgists, and steel men were engaged to produce a rail that would eliminate at least most of the difficulties that were being experienced with rails, and their efforts eventually culminated in the development of a 135-lb. high-carbon section, the heaviest produced anywhere up to that time. The first 1,000 tons of the new section were rolled at the Steelton plant in September, 1910, being curved at the mill to specific ordinates. These rails were shipped to the L&S division and were laid in the eastbound main track on the sharpest curves, such as the Oxbow curve (10½ deg.), Stoney Creek (13 deg.), Rockport (11 deg.), Freemansburg (10½ deg.), etc. About 950 tons were laid in that year and the benefits were so soon apparent that more and larger quantities were added, and in the course of 10 or 12 years practically the entire eastbound track in the 80 miles of line between Easton, Pa., and Rita except crossings, switches, etc., were relaid with 135-lb. rails. Consequently with the application of the 135-lb. rail in the eastbound track, the 90-lb. rail in the westbound main track was replaced, as needed, with 100-lb. A. R. A. type A rail, and the switches in the eastbound track were renewed with rail of the same section."

Thus, Mr. Twining's remarks serve to strengthen my conviction that the Jersey Central was the pioneer road in the use of heavy rail sections. During the period when the 135-lb. section was being introduced on the L&S division I was serving as vice-president and general manager of the Jersey Central and I have a distinct recollection that an officer of one of our largest neighboring lines told me that I could not possibly justify such practice.

W. G. BESLER,
Chairman of Board,
Central of New Jersey.

NEWS

Plan Would Erase C. I. & L. Stock

Examiner's refinancing project would divest L. & N. and Southern of control

The Interstate Commerce Commission, on August 4, received from its Examiner, Milo H. Brinkley, a proposed plan of reorganization for the Chicago, Indianapolis & Louisville which would wipe out both the preferred and common stock, thereby divesting control of the road from the Louisville & Nashville and the Southern, and lodging it in the present bondholders. The examiner found that the Monon's preferred and common stocks and certain other notes and claims were without value and the holders thereof should not be accorded any part in the reorganization of the company.

Under the examiner's plan, the new capitalization would be limited to \$34,000,000, on which the fixed interest requirements for the first year would amount to \$56,000. The contingent interest figure would be \$724,460 a year. The capitalization at the end of last year was approximately \$42,000,000 on which the annual fixed charges totaled roughly \$1,500,000.

The Southern and the L. & N. each own 46.7 per cent of the common stock and 38.8 per cent of the preferred stock of the Monon. Also, they hold notes totaling \$1,170,360, which the examiner found to be without value.

The new capitalization, according to the examiner's plan, would consist of \$1,000,000 of fixed interest first mortgage four per cent bonds; \$16,099,100 of second mortgage income 4½ per cent bonds; about \$7,799,500 par value of five per cent preferred stock, \$100 par; and approximately 354,593 shares of no par value common stock. The equipment trust obligations would remain undisturbed and would become debts of the new company. The notes held by the L. & N. and the Southern, the claims of general creditors and the preferred and common stocks would be canceled.

In allocating new securities the unpaid interest to January 1, 1939, the proposed effective date of the plan, would be added to the principal amount of the obligation.

The Railroad Credit Corporation and the Chase National Bank would receive 50 per cent of their claims in preferred stock and 50 per cent in no-par common stock, one share for each \$25 claim. The examiner also believes that provision should be made for the creation of a capi-

tal fund into which payments should be made annually, such payments to be equal to two per cent of the railway operating revenues of the reorganized company for the preceding calendar year, less any portion of the fund that is left unexpended for that year. The fund, he said, should be available for the cash payment on new equipment purchased for net additions and betterments to the property of the reorganized company. The fund would be available only to the extent earned in any year and would not be cumulative.

Hearing on Application to Build Harrisburg-Pittsburgh Line

The Interstate Commerce Commission has set August 22 as the date for hearing at Pittsburgh, Pa., on the application of Roy Greene for a certificate authorizing the construction of a railway line between Pittsburgh and Harrisburg. Examiner Prichard will preside.

New Members On Missouri Public Service Commission

Governor Lloyd C. Stark has appointed Scott Wilson, former chairman of the Missouri Highway Commission, and Marion S. Francis, lawyer, Mexico, Mo., members of the Missouri Public Service Commission succeeding Albert D. Nortoni, deceased, and William M. Anderson, whose term has expired, respectively.

Four Historic Locomotives Now in Museum at Chicago

The Chicago & North Western's "Pioneer" of 1848; the Illinois Central's "1401" of 1880; the Natchez & Hamburg's "Mississippi" of 1834, and the Baltimore & Ohio's "York," of 1831, have been installed in the Museum of Science and Industry at Chicago as a permanent exhibit. Replicas of these original locomotives have been made and will be used by the railroads for exhibition purposes.

Retirement and Other Accounts

Government securities aggregating \$66,200,000 were held in the Railroad Retirement Account on June 30, according to an August 3 statement in which Secretary of the Treasury Morgenthau listed the government and other securities held in governmental trust accounts and by governmental corporations and agencies. On the same date there were \$327,000 of government securities in the Alaska Railroad Retirement and Disability Fund, while, according to "latest available figures," the Inland Waterways Corporation held \$4,187,000 in government securities.

Rate Differentials Harmful to South

Emergency Council lists them as a major problem of industry there

Freight rate differentials comprise one of southern industry's major problems, according to the National Emergency Council, which on August 13 made public a 60-page report in response to the recent request of President Roosevelt for a concise statement of the needs and problems of the South. The freight rate situation is treated in Section 14 of the report, which is headed "Industry." The report as a whole includes 15 sections, treating such other subjects as: Economic resources; soil; water; population; private and public income; education; health; housing; labor; women and children; ownership and use of land; credit; use of natural resources; purchasing power.

The reference to freight rate differentials calls them the major problem which faces almost all industry in the South—"in addition to absentee ownership and the high cost of credit." Earlier it had been noted in the section on "Use of Natural Resources" that "all the major railroad systems (in the South) are owned and controlled elsewhere." Discussing the differentials, the report says in part:

"The present interterritorial freight rates which apply on movements into other areas of many southern manufactured and semifinished goods, and some agricultural products and raw materials, handicap the development of industry in the South. This disadvantage works a hardship particularly with regard to shipments into the important northeastern territory. This region, containing 51 per cent of the nation's population, is the greatest consuming area. The southeastern manufacturer sending goods across the boundary into this region is at a relative disadvantage of approximately 39 per cent in the charges which he has to pay as compared with the rates for similar shipments entirely within the eastern rate territory. The southwestern manufacturer, with a 75 per cent relative disadvantage, is even worse off. Such a disadvantage applies to the southern shipper even when, distance considered, he is entirely justified on economic grounds in competing with producers within the eastern territory.

"In effect, this difference in freight rates creates a man-made wall to replace the natural barrier long since overcome by
(Continued on page 264)

Rio Grande Stock To Be Wiped Out?

Recommendation by I. C. C. examiner would free property from Mo. P.-W. P. control

Following close on the heels of a proposed plan of reorganization for the Chicago, Indianapolis & Louisville which would entirely obliterate any claims of the preferred and common stockholders, the Interstate Commerce Commission again on August 9 received from Examiner M. S. Jameson a proposed plan of reorganization for the Denver & Rio Grande Western which would have the same effect on that road's common and preferred holders, thus removing control from the Missouri Pacific and the Western Pacific. From the number of proposed plans which commission examiners have issued recently incorporating this philosophy of corporate reorganization, one is led to believe that the commission will adopt only those plans which will make the roads "depression-proof." In the only final plan that the commission has placed its approval on, that procedure was followed when it recommended that the control of the Spokane International be taken from the Canadian Pacific, the majority stockholders, and lodged in the bondholders.

Under the proposed plan of Examiner Jameson, the total capitalization of the new company would be approximately \$153,579,233 with fixed interest charges approximately \$2,276,699, contingent interest charges \$1,235,390, and preferred stock dividend requirements \$1,627,060 per year. Including the maximum payment of \$600,000 to the capital fund and \$137,625 to the sinking fund, as recommended by the examiner, the proposed annual charges, ahead of dividends on the new common stock would be about \$5,876,414.

The total funded debt of the company as of June 30, 1938 was \$148,083,850 with accrued interest of \$22,807,560, making a total of \$170,891,410. Meanwhile, there is outstanding \$16,445,600 of preferred stock and 300,000 shares of no par common stock, together with 460 shares of no par common stock of the Denver & Salt Lake. The total amount of fixed interest charges for this capitalization was \$5,835,392 per year, the contingent interest charges \$584,040, and the preferred stock dividend requirements \$986,736 per year.

The capitalization of the new company, excluding securities to be pledged, would consist of \$2,795,000 of equipment obligations taken over, \$51,629,377 of new first mortgage four per cent bonds, \$27,453,104 of income mortgage 4½ per cent bonds, \$32,541,204, par value, of five per cent preferred stock, and 371,761 shares of common stock, of no par value. Also, the examiner would have the new company issue secured notes to the Railroad Credit Corporation and to the Chase National Bank, as of June 30, 1938, representing extensions of the present obligations of approximately \$278,000 and \$1,706,448, respectively. Unsecured claims, other than

those which the court has ordered to be paid in cash, would be settled on the basis of one share of new common stock for each \$100 of claim. The examiner believes that the claims of the Reconstruction Finance Corporation are "clearly entitled to settlement in full, within the limits of the permissible capitalization," and he recommends that that agency be given \$11,959,469 of new first mortgage series A bonds, equal to the face amount of the notes outstanding plus accrued interest to June 30, 1938.

The finding by the examiner that the preferred and common stockholders have no claim on the assets of the company will have the effect of eliminating control of the road by the Missouri Pacific and the Western Pacific as each own half of the capital stock of the company.

The examiner has also recommended that the D. & R. G. W. should be consolidated with the Denver & Salt Lake Western, the Rio Grande Junction, the Goshen Valley, and the Denver & Salt Lake. He feels that the present record is inadequate for a determination of the question of merging the Western Pacific with the reorganized Denver & Rio Grande Western.

L. M. S. Employee School Opened

The Railway Staff Transport School, built by the London Midland & Scottish (Great Britain) at Derby, England, was opened on July 22 by the Right Hon. Leslie Burgin, minister of transport of Great Britain. The school, which is the country's first "college" for railroad employees, will offer courses to resident students selected from younger members of the London Midland & Scottish staff.

In his speech at the official opening, Mr. Burgin declared: "That management should be invested with the dignity of a science is a sign of the times. The science of management of one of the great main line railroad systems is now especially to be taught."

New Haven Booklet Tells of Factory Offers

The Industrial Development department of the New York, New Haven & Hartford has prepared for distribution to industrialists a 118-page, 5¼-in. by 8-in. booklet describing existing factory and warehouse buildings along its lines which are available for sale or lease. Bound with a new patented plastic back and printed on heavy paper, the book contains a picture of each factory structure, below which is listed specifications of the building, purposes for which it may be used, railroad facilities, whether it is for sale or lease (in some cases the asked price is quoted), and the address of the owner or agent. On the page opposite each building photograph is printed pertinent information concerning the town or city in which the structure is located, presenting such facts as trading population in surrounding area, distance to large cities, total wages and wage earners, principal lines of manufacture, banks, etc.

A two-page map at the front of the book shows freight train arrival time at various key cities through the country from origin points in New Haven territory.

Truck Pilots Get I. C. C. Double O

Study finds average driver is 33 years old, weighs 165 lb., has 14 years' experience

The Interstate Commerce Commission's Bureau of Motor Carriers has submitted to the commission's Division 5 an analysis of information furnished by common and contract carriers relating to drivers of motor vehicles engaged in interstate or foreign commerce as of July 1, 1937. The study, prepared by the Section of Safety of the Bureau of Motor Carriers, is called by the latter's director—W. Y. Blanning—"the first of its kind ever to be conducted on a nation-wide basis." It was based on a representative sample of data obtained in response to that part of the commission's order in Ex Parte No. MC-4, Motor Carrier Safety Regulations, which required the operators to furnish certain driver information on a specified form.

Among other things the study describes "the average driver" and goes into such matters as the age, height, weight, race and color of drivers; also, the length of present employment, driving experience, state license requirements and medical examination. "It provides," says Mr. Blanning in his letter of transmittal, "answers to numerous questions regarding drivers in interstate service." The director goes on to cite, for example, "the fact that only 34 per cent of these drivers have ever undergone a medical examination in connection with their employment" which "will provide justification for a special study of this factor in its relation to the safety of operation." Also, further study into the character of examinations conducted by states prior to the issuance of licenses "will be appropriate" in the interest of promoting "greater uniformity in the standards of such examinations."

"The report as a whole," Mr. Blanning concludes, "will also be valuable in connection with accident analysis by the Bureau of Motor Carriers. The data herein presented, with respect to age groups, experience groups, and length of employment groups, will provide a substantial background for the further study of the types of drivers involved in accidents in interstate commerce."

Data were submitted in response to the commission's order for 128,038 drivers for 22,532 carriers. The sample selected for analysis covered returns of 7,239 carriers employing 40,107 drivers, equivalent to 32.1 per cent of the total companies reporting and 31.3 per cent of the total number of drivers reported. Significance is attached to the fact that "the results shown in this report embrace a higher proportion of small operators than any previous survey." Owner-drivers constituted 10.9 per cent of all drivers reported, and were shown to be "older, heavier and more experienced men." While the majority of the owner-driver operations are one-vehicle affairs, there were instances where

(Continued on page 264)

I. C. C. Plans Its Truck Size Probe

States asked to defend their weight curbs and show how trucks affect road costs

The Interstate Commerce Commission's Ex Parte No. MC-15 inquiry in the matter of regulations governing sizes and weights of interstate motor vehicles will be "a comprehensive type of investigation in keeping with the importance and complexity of the problems presented," according to a notice issued by Secretary W. P. Bartel, outlining the scope of the proceeding and the procedure to be observed. The investigation was instituted on November 8, 1937, for the stated purposes of enabling the commission to make a report under section 225 of the Motor Carrier Act on the need for federal regulation of the sizes and weights of motor vehicles and combinations thereof, and to prescribe reasonable requirements under section 204 of the act as to sizes and weights insofar as they affect safety of operation.

The notice goes on to say that "in the interest of expediting the work, lessening the demands on the parties and reducing points of difference between those who will desire to take part, the commission will, so far as practicable, assemble and analyze statistical and other data "bearing on each of four topics which it now regards as essential points to be covered. Also, to the extent that it is feasible the commission's data will be released in tentative reports of its staff prior to the hearings or before the completion of hearings, which will be held "in various parts of the country, at dates to be announced."

The four topics listed are: Limitations prescribed by the states, reasons therefor, and states' views as to their effects; legal considerations, covering such questions as the proper line or lines of demarkation of federal and state powers in the control of road use; economic and engineering investigations, including (a) road facilities and vehicles used in interstate transportation, (b) highway costs, (c) characteristics of vehicles in relation to road and bridge facilities, (d) relation between vehicle sizes and weights and costs of operation and ability to render service; relation between sizes and weights of vehicles and highway safety.

July Employment Up 1.61 Per Cent from June

Railway employment increased another 1.61 per cent—from 914,765 to 929,477—during the one-month period from mid-June to mid-July, although it was still down 20.86 per cent from July, 1937, according to the Interstate Commerce Commission's compilation, based on preliminary reports. Increases over June were reported for all groups except that embracing executives, officials and staff assistants, which was off 0.56 per cent. Maintenance of way and structures forces were up 3.42 per cent from the previous month but down 27 per cent under July, 1937; main-

tenance of equipment and stores, 1.74 per cent above June and 29.28 per cent under July, 1937; train and engine service, up 1.63 per cent and down 17.35 per cent respectively.

The index number, based on the 1923-1925 average as 100 and corrected for seasonal variation stood at 50.7 in July—up 0.6 per cent from June's 50.1.

Equipment for Brazil?

The federal government's Export-Import Bank has under consideration the matter of aiding in the financing of exports to South America, including pending proposals for the sale of railway equipment. Among the latter is the tentative plan whereby 1,000 freight cars and 26 locomotives would be sold to the Brazilian Central Railway. Warren Lee Pierson, president of the bank, has just left for a vacation trip to South America where he is expected to survey the situation.

Motor Transport in Annual Reports—Correction

In an article entitled "Executives Scan Highway Transport in Reports," in the *Railway Age* for July 23, page 147, the Mackinac Transportation Company was erroneously referred to as a motor carrier affiliate of the Duluth, South Shore & Atlantic. The company is actually a water transportation subsidiary, operating car ferries between St. Ignace, Mich., and Mackinaw City. In the same article, page 145, due to a typographical error, the cost of L. C. L. pick-up and delivery service on the Reading was stated as \$1,708 per ton, instead of \$1.708.

Cases Recently Filed in the Supreme Court

Two cases have recently been filed in the Supreme Court of the United States, one, the Inland Steel Company v. the United States et al. and the other, the Chicago By-Products Coke Company v. the United States et al., in which these companies are seeking a final decision on their attempts to enjoin the enforcement of Interstate Commerce Commission orders directing the railroads to cease and desist from paying allowances for services in switching cars. The commission has previously held that the carriers cannot make such allowances.

In another case of the Alton Railroad Company v. the Illinois Commerce Commission et al., that company is seeking to have the Supreme Court determine whether or not it may discontinue services over a switch track built for private industrial purposes upon property owned by the industries served, which had borne the original expense, unless these industries undertake the track's maintenance. The Illinois Supreme Court has held that the Commerce Commission can compel the railroads to maintain the track since the track, crossing public thoroughfares, became part of the main line of the railroad system, and therefore subject to government regulation. The railroad is contending that this requirement deprives it of its property without due process of law in violation of the Fourteenth Amendment.

Rutland Workers Accept Pay Plan

Take 17 per cent cut under protest; separate R. L. A. proceedings end

Given the choice of voluntarily accepting a stipulated wage deduction or giving up their employment after August 4, employees of the financially-embarrassed Rutland agreed to pursue the former alternative, under protest, when nine local general chairmen of railroad unions and brotherhoods agreed late on August 3 to direct the road's employees to continue in their duties, pending settlement of matters in controversy under the Railway Labor Act. The signers recorded their formal protest, however, "against any reductions or deductions in rates of pay, unless and until such reductions or deductions are procured in accordance with the provisions of the Railway Labor Act."

The following day the separate wage cut negotiations which the Rutland was carrying on under the routine provisions of the Railway Labor Act were merged with the wage negotiations now being undertaken by the national conference of the carriers, by agreement between the Rutland receiver and national officers representing the railroad unions. The receiver had served notice on July 1, under the provisions of the Act, that the road would reduce all rates of compensation of its 1,300 employees by 15 per cent, effective August 4. By reason of this agreement, signed after conferences held under the direction of George A. Cook, of the National Mediation Board, the road and employee representatives bring to a close separate wage negotiations under the Railway Labor Act and "mutually agree that the disputes will be disposed of respectively on the same terms of settlements of similar question now in national conferences at Chicago."

It is to be understood that the action toward a wage cut initiated by the road under the Railway Labor Act and the directions of Federal Judge H. B. Howe dated July 12 and 30, which served notice on the employees to accept wage deductions, were separate negotiations. They are related only to the extent that whatever wage reduction is decided upon in the present national negotiations, if any, will be applied to the deductions as stipulated by the court and accepted by the union representatives under protest on July 3; that is, the amount to be withheld from the pay envelopes, which the road has a moral obligation to pay, when earned, will be reduced by an amount equal to the percentage wage reduction agreed upon by the national body of carriers under the Railway Labor Act.

The national wage conferences at Chicago have complicated the problem of the employee and management negotiators in the Rutland wage disputes. The former did not wish to accept a full 15 per cent wage cut for 1,300 employees on the Rutland and furnish thereby a precedent which would weaken their bargaining power for union members country-wide. The Rut-

land, in its turn, could not, before the deduction agreement of August 3 made continued operation possible, afford to join in the Chicago conferences because the road needed relief immediately and could not wait for the distant decision of the national negotiations; furthermore, a 15 per cent wage reduction was a minimum figure in its case, and not under any circumstances a "trading figure."

The wage deduction which union representatives accepted is based upon a sliding scale ranging from 10 to 30 per cent, according to weekly rate of pay, as was reported in the *Railway Age* of August 6, page 225. Horizontally, it amounts to approximately 17 per cent, or about \$330,000 per annum. While the amounts to be withheld from the employees under the deduction plan do not constitute a lien on the property, they will be set up on the books as a deferred liability and will be paid out of net earnings. The deduction does not reduce expenses; it conserves cash. The 15 per cent of the wage bill which was withheld between July 1 and August 4, by a court direction dated July 12, amounts to between \$25,000 and \$30,000 and will be paid back "when the road has the money."

The total officers' salary bill for the road has been reduced about \$67,850 per annum and constitutes a 56 per cent cut in yearly compensation through the abolishment of positions and drastic slashes in the individual salaries of the staff.

The efforts of shippers and business men along the road to aid in restoring its stability and insure its continued operation have culminated in the formation of an organization known as the Rutland Railroad Co-operating Traffic Association. Its officers include the president of a cloth manufacturing concern, the head of a structural steel company, the secretary of the Rutland, Vt., Chamber of Commerce and the treasurer of a savings bank. Seeking to draw support from communities all along the line the association has invited subscriptions for a \$15,000 "kitty" to be used as a working fund. Included in the road's plans is the retention of a "high-grade traffic expert" whose business it will be to contact shippers along the road and persuade them to "ship via the Rutland."

The Rutland Railroad Co-operating Traffic Association has released the following statement concerning its aims:

"The purpose of this organization shall be to co-operate with all agencies interested in giving immediate and continuous assistance to the Rutland Railroad, by promoting the movement of all possible traffic over the Rutland lines, in order to improve its financial stability and insure its future successful operation; to advise and counsel with officials in charge of the policy and operation of the Rutland Railroad, by the employment of a trained and experienced representative of this association with the view to improving service to shippers and receivers and service to the general public using the Railroad; and in all other ways to co-operate with the Rutland Railroad to the end that economic values in large sections of Vermont and New York may be preserved."

Norfolk Southern Truck Route

The Interstate Commerce Commission, Division 5, has approved conditionally the purchase by the Norfolk Southern Bus Corporation, subsidiary of the Norfolk Southern, of operating rights of the Virginia Dare Transportation Company on a motor truck route between Norfolk, Va., and Elizabeth City, N. C., via Sligo. The condition attached to the approval of the transaction requires the cancellation of the sale contract's clause establishing exclusive freight interchange arrangements between the parties at Sligo.

I. C. C. Probe of Contract Carrier Rates in Central Territory

The Interstate Commerce Commission, Division 5, has instituted on its own motion an investigation of Central territory contract carrier minimum charges, and the rules, regulations or practices affecting such charges and the value of the service thereunder. All contract truckers operating in the territory involved are made respondents to the proceeding (Ex Parte No. MC-27), except carriers of household goods, live stock, automobiles, petroleum products in tank trucks, and articles of unusual size or value. Hearings will open October 4 at the Hotel Sherman, Chicago, before Examiner A. S. Parker.

L. N. E. R. Gives Bell of Baldwin Number 5000 to an American

A bell from an American locomotive, famous in its day, after years of service in Great Britain was returned to American hands in a recent ceremony at Kings Cross station, London, Eng., when Sir H. N. Gresley, chief mechanical engineer of the London & North Eastern, formally deeded the bell to Richard E. Pennoyer, an American resident abroad and the brother of A. Sheldon Pennoyer, an American artist noted for canvasses portraying railroad scenes.

The bell was placed originally on the 5,000th locomotive turned out by the Baldwin Locomotive Works in March, 1880, for fast service on the Philadelphia & Reading (now Reading) between New York and Philadelphia. A single driver type (4-2-2 classification), P. & R. No. 507 was noted for its departures from standard practice. In 1881, it was purchased



This Bell Originally Adorned Baldwin Engine No. 5,000, a Single-Driver Type

and sent to England by Lovatt Eames of the Eames Vacuum Brake Company (predecessor firm of the New York Air Brake Company) to demonstrate the efficiency of his brake system. Eames' brake did not "take" so well, nor did the engine. It was soon scrapped and its bell utilized by the Great Northern and its successor, the London & North Eastern, as a time signal at locomotive "depots." Its service finished, the bell has now returned to American hands.

A. A. R. Poster Tells True Stories of Young Trespassers

The September poster of the Safety Section, Association of American Railroads, which is addressed to "young people and their friends" contains a group of true stories of youngsters who sustained injuries in trespassing on railroad property. Collected by "the wandering safety reporter," the sketches tell of legs and arms lost forever in "hopping trains," "bumming rides" on freight cars, picking up coal, etc. The frontispiece is a large photograph of a one-legged young man who is "Still Selling Papers," a victim of moving freight car wheels.

Statistics presented in the text of the poster reveal that, during the ten years 1928 to 1937, inclusive, 1,369 trespassers under 14 years of age, 2,600 who were 14 to 21 years of age, and 21,426 adults lost their lives on railway property, making a total of 25,395 persons who were killed by railway operation while trespassing.

The Canadian Roads in June

Gross revenues of the Canadian Pacific in June totaled \$10,144,944, a decline of \$1,274,018 from last year. Operating expenses totaled \$9,633,535, a decline of \$590,316, bringing net operating revenues of \$511,408, which were \$683,702 less than last year. For the six months, gross revenues were \$61,287,528 (down \$5,502,733), operating expenses were \$58,606,499 (up \$76,392) and net operating revenues were \$2,681,028 (down \$5,579,125).

The Canadian National in June had \$13,702,244 of gross revenues (off \$2,389,657 from last year). Operating expenses totaled \$14,472,826 (off \$1,183,887) and the net operating deficit was \$770,582 (as compared with net operating revenue of \$435,188 in June of last year). For the six months, gross totaled \$82,759,559 (off \$12,236,755), operating expenses were \$88,439,541 (up \$111,175) and the operating deficit was \$5,679,982 (as compared with net operating revenue of \$12,347,930 last year).

Unemployment Insurance Head to Get \$10,000 a Year

The United States Civil Service Commission has announced an open competitive examination for the position of Director of Unemployment Insurance. The position will be under the Railroad Retirement Board and will be the highest paid Civil Service position in the government service. The duties of the new Director will be to set up and direct the Bureau of Unemployment Insurance, which will administer the Railroad Unemployment Insurance Act,

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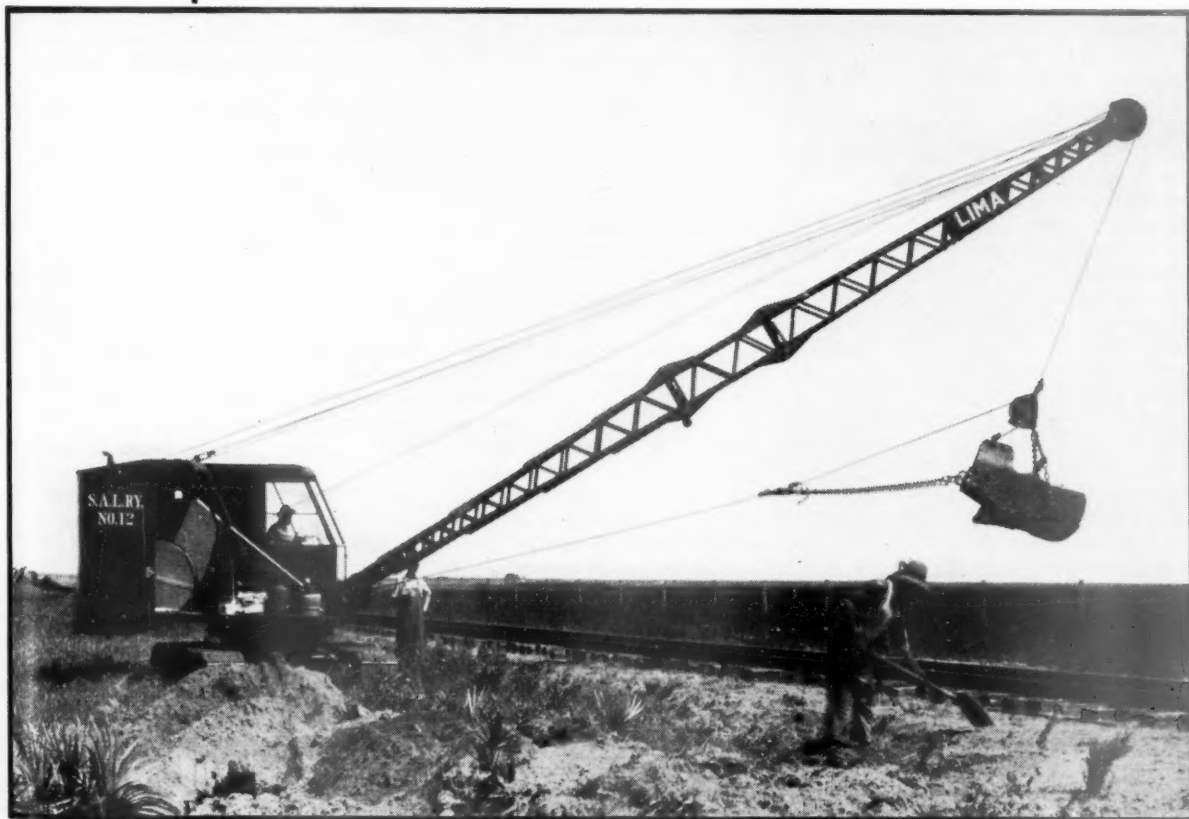
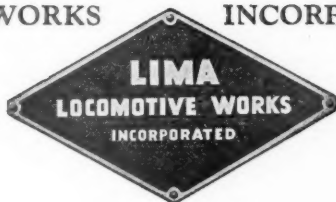
Lima's Reputation built into

POWER SHOVELS, CRANES AND DRAGLINES

Lima's reputation as a Locomotive Builder has been well established for many years. « « « In the same shops Lima's skilled workmen, using high quality materials, build power shovels, cranes and draglines in sizes from three-quarter cubic yard to four cubic yard capacity. « « « Below is pictured a new three-quarter cubic yard capacity dragline recently purchased by the Seaboard Air Line Railway for use on their main right of way.

LIMA LOCOMOTIVE WORKS

INCORPORATED, LIMA, OHIO



which was approved by the President on June 25, 1938.

Applicants for the position will not be required to report for written examination, but will be rated on the extent of their education, and on the extent and quality of their experience and fitness which are relevant to the duties of the position. The principal qualification for the position is "at least eight years of broad and progressively important administrative experience in the field of government, or social insurance, or industrial relations, or labor organization, or labor legislation or railroad management, of a scope and quality to demonstrate ability to perform the duties of the office." All applications must be in the hands of the Civil Service Commission by August 10, except from the states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming, where applicants will have until August 13 to file their applications.

Court vs. State vs. Court: New Haven is Between

Judge F. J. W. Ford, of the federal district court at Boston, Mass., has denied a petition of the New York, New Haven & Hartford for a temporary injunction to restrain the Massachusetts State Department of Public Utilities from enforcing its order requiring the railroad to maintain passenger service on its Cape Cod line from Yarmouth, Mass., to Provincetown. Previously the district court at New Haven, Conn., had told the road to go ahead with its proposed abandonment of stations and curtailment of passenger service on certain Old Colony, Boston & Providence and New England lines, which included cessation of outer Cape Cod passenger service.

Thereupon, the Massachusetts Department of Public Utilities, which had not itself completed its consideration of the New Haven's "economy plan," argued that it had prior jurisdiction in the case and petitioned Judge Hincks of the court at New Haven for a stay of his order. Judge Hincks in turn, claimed the right to decree service curtailments because the railroad is in the court's supervision under Section 77 of the Bankruptcy Act. Unable to reach an understanding with the Connecticut district court, the state utility body decided to make a test case of this state's rights controversy and challenged the authority of the federal court by issuing an order enforcing maintenance of existing passenger schedules over the Yarmouth-Provincetown line.

Faced by this order the railroad appealed to the district court at Boston, Mass., for a temporary injunction restraining the utility department's order. This the court denied on August 8, thereby exhibiting a difference of opinion with its neighboring federal court at New Haven and giving support to the state's contention of superior jurisdiction.

Freight Car Loading

Loading of Revenue freight for the week ended July 30 totaled 588,703 cars, an increase of 7,821 cars or 1.3 per cent above the preceding week, but a decrease

of 190,388 cars or 24.4 per cent below the corresponding week in 1937 and a decrease of 330,598 cars or 36 per cent below the same week in 1930. All commodity classifications except grain and live stock showed increases over the preceding week, while all commodity classifications showed decreases under last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loading			
For Week Ended Saturday, July 30			
Districts	1938	1937	1936
Eastern	125,228	158,385	159,150
Allegheny	106,841	158,857	149,884
Pocahontas	40,415	53,737	49,707
Southern	84,979	102,219	98,327
Northwestern	84,683	131,451	122,458
Central Western	100,611	117,372	110,788
Southwestern	45,946	57,070	57,215
Total Western Districts	231,240	305,893	290,461
Total All Roads	588,703	779,091	747,529
Commodities			
Grain and Grain Products	50,711	51,255	50,964
Live Stock	10,828	11,269	15,423
Coal	99,606	118,665	124,671
Coke	4,546	10,158	8,842
Forest Products	27,875	42,526	35,725
Ore	23,082	73,679	53,558
Merchandise l.c.l.	147,924	166,975	163,958
Miscellaneous	224,131	304,564	294,388
July 30	588,703	779,091	747,529
July 23	580,882	767,470	730,981
July 16	602,300	766,384	720,359
July 9	501,013	678,958	724,277
July 2	588,864	802,346	649,703
Cumulative Total, 30 Weeks	16,503,200	22,032,078	19,622,807

In Canada.—Car loadings for the week ended July 23 totaled 43,820, being a decline of 5,731 from last year and a decline of 98 from the preceding week, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
July 23, 1938	43,820	17,894
July 16, 1938	43,918	17,789
July 9, 1938	43,346	16,763
July 24, 1937	49,551	24,194
Cumulative Totals for Canada:		
July 23, 1938	1,267,703	599,156
July 24, 1937	1,385,936	797,707
July 18, 1936	1,262,406	676,122

Lambs Now "Ma-a" in Railroad Cars

Lambs raised in Clinton county Ohio, now ride to the Cincinnati market in Baltimore & Ohio stock cars, where formerly they were carried by highway trucks, and farmers save approximately 35 per cent in yardage, transportation and marketing costs through a co-operative association utilizing railroad haulage exclusively, chiefly because the railroad's Agricultural Development department, back in '32, encouraged and aided farmers in the locality to organize a "co-operative." The story is told in the July issue of the "Baltimore & Ohio Magazine" under the title "Come On, Double Blues!", which refers to the mark of two blue rings customarily placed on premium lambs.

In 1932, sheep raisers of Clinton county owned but small flocks and paid little attention to good breeding principles. Furthermore, they marketed the animals individually and entirely by truck, which left the B. & O. stock pens at Wilmington out in the cold. Seeking to raise the level of sheep culture in the section, increase farm-

ers' profits and bring the traffic back to the rails, the development department of the road aided the farmers in organizing "The Clinton County Lamb and Fleece Improvement Association" with the slogan "Double blues from any ewe."

Now the association comprises 350 sheepmen, all of whom use registered mutton rams. Members pool their shipments, utilizing the railroad stock pens at Wilmington for assembling and grading their animals. All marketing is performed through the Producers Co-operative Commission Association, located at the Cincinnati union stockyards. All shipments are made by rail.

It is reported that in this way the farmers have saved some 17.2 cents per hundredweight in marketing costs, as compared with the former individual marketing, truck-hauling practice. That is, it would have cost the men approximately \$1,600, or 35 per cent more, to have marketed their lambs individually by truck last year than it did through the association by rail.

W. P. A.'s Hopkins Flays Southern Rates, Scents a Plot

Following the lead of his chief, President Roosevelt, Harry L. Hopkins, Works Progress Administrator, in an address delivered at Memphis, Tenn., over a nationwide hookup of the Columbia Broadcasting System on August 5, discussed in detail what Mr. Roosevelt had labeled the "Nation's Economic Problem Number One" and laid on the doorstep of the South's freight rate structure much of the blame for that section's economic plight. Mr. Hopkins had met his regional administrators in Memphis for a round-table conference to discuss his recently announced plans of putting at least 200,000 more men to work in the South during periods when agricultural work is slack.

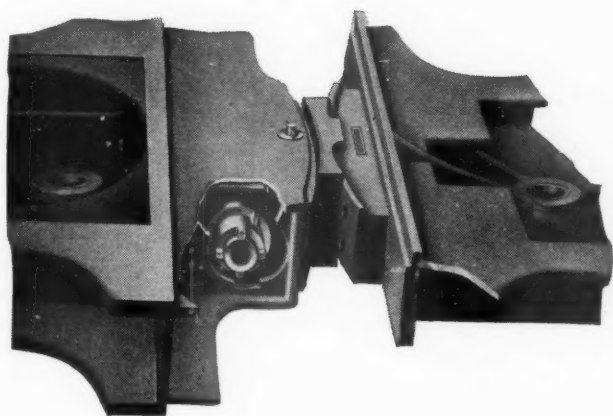
After discussing the economic conditions in the South, Mr. Hopkins enumerated those factors which he believed held the section back. These were the after-effects of the Civil War, the whole trend of the development of our industrial economy, the tariff, the railroads and the effects of the one-crop system.

"The history of the railroad," he went on to say, "is a significant part of this story. The railway structure of the nation assumed its general outline from 1860 to 1875, when the South was prostrate. The transcontinental lines were laid out to bring tribute from producing to manufacturing areas. And this was done with public subsidy. For every mile of transcontinental track built on the plains, the government gave the railroad company 20 sections of good land. These land-grant railroads were given a total area of land larger than the Republic of France. In addition, the government advanced federal money ranging from \$16,000 to \$48,000 per mile."

The WPA Administrator then went on to assert that these roads aided by the government were so built as to choke off the river traffic and subordinate the advantages of the West and South.

Concluding his discussion of the South's freight rate structure, Mr. Hopkins said that "Later the freight rate structure was planned to clinch the industrial supremacy

GREATER SAFETY, IMPROVED RIDING, and LOWER MAINTENANCE with the



Franklin E-2 Radial Buffer

Slack between engine and tender, one of the principal causes of hard riding, is eliminated when you install the Franklin E-2 Radial Buffer.

The Buffer permits full freedom of lateral and vertical movement, and cannot get into improper position. Maximum safety is assured as the Buffer does not interfere with proper tracking.

Because it eliminates excessive vibration and greatly reduces the number of pipe failures, loose cabs, and other defects caused by slack and pound, the cost of locomotive maintenance is materially reduced. The Franklin E-2 Radial Buffer quickly pays for itself . . . in Economy . . . in Safety . . . and in Lower Maintenance.



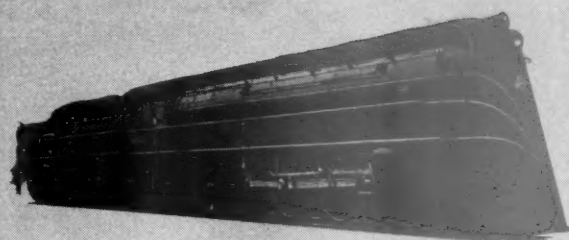
Because material and tolerances are just right for the job, genuine Franklin repair parts give maximum service life.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

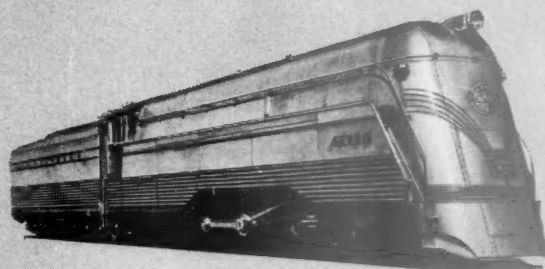
NEW YORK

CHICAGO

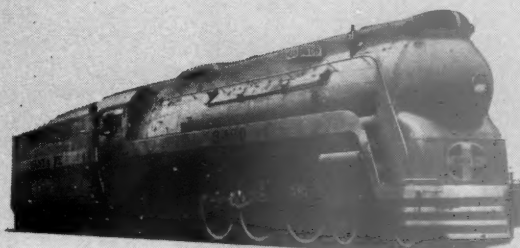
MONTREAL



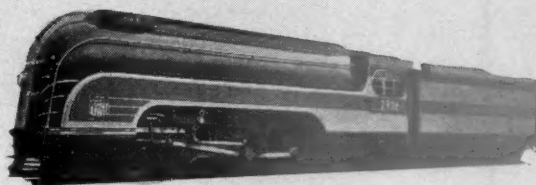
Chicago and North Western Ry. Co.



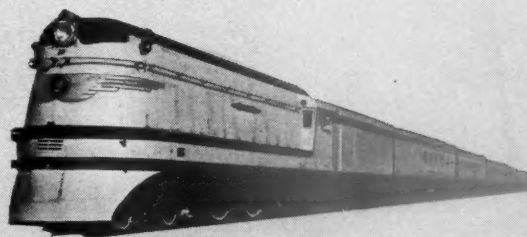
Chicago, Burlington and Quincy R. R. Co.



Atchison, Topeka and Santa Fé Ry. System



Union Pacific R. R.



Chicago, Milwaukee, St. Paul and Pacific R. R. Co.

of the North and East. It still stands, and today's rate differentials penalize both Southern railroads and Southern shippers. Northern manufacturers have a rate advantage of about 39 per cent over Southern manufacturers who want to ship the same products into the rich and populous North and East."

Truck Pilots Get I. C. C. Double O

(Continued from page 260)

one or more officers of companies operating as many as 22 buses and 23 trucks reported themselves as drivers. From the standpoint of operation, 14.8 per cent of the drivers reported were engaged in bus transportation, 83.1 per cent in truck transportation and the remaining 2.1 per cent were employed by carriers which operated both buses and trucks.

"The average driver engaged in the transportation of persons or property in interstate commerce," says the report, "was found to be 33.3 years of age and 5 ft. 8¼ in. in height, and to weigh 165.4 lbs.; his average experience driving buses and trucks was 13.8 years, representing 250,000 miles of driving. On the average, the drivers had worked for their present employer 4.3 years. About 90 per cent of the drivers were licensed in one state, 7.5 per cent in two states, 0.7 per cent in three states, and a very few in four or five states. About 1.7 per cent did not report the type of license held, if any. The youngest drivers in the sample were 15 years of age, there being three truck drivers thus reported; the oldest, also a truck driver, was 79 years of age. The youngest bus driver was 18 and the oldest 70 years of age. Of the total of 40,107 drivers, only 76, or 0.19 per cent, were below 18 and 300, or 0.75 per cent, were 60 or more years of age. Twenty-eight of the 40,107 drivers were women, 7 of whom drove buses, 19 drove trucks and 2 were employed by carriers who operated both types of service."

In similar fashion the report goes on to break down the foregoing into descriptions of the average bus driver, the average truck driver, the average bus-truck driver and the average owner-driver. Next comes the discussion of the age of drivers wherein it is pointed out that the I. C. C. regulations as promulgated limit the minimum age of drivers to 21, except those driving on July 1, 1937, or within one year prior thereto, but in no case to less than 18 years of age. "As of July 1, 1937," the report goes on, "slightly more than 2 per cent of all drivers reported were under 21 years of age." Returns on the weight of drivers revealed that there are few lightweights in the business; bus drivers averaged 166.9 lb. and truck drivers 165.2 lb.

Mileage is preferred over years of service as a measure of driving experience, and 50,000 miles is taken as the measure of "considerable driving experience." Sixty-three per cent of all bus drivers showed mileage experience in excess of that figure, while 48.8 per cent of those driving trucks of less than 1½ tons, 59.7 per cent

of those driving trucks of over 1½ tons, and 56 per cent of those driving trailer combinations, had driven a greater mileage.

After the review of state licensing requirements comes brief mention of the race and color of drivers (97.4 per cent are classed as Caucasian) and a discussion of medical examinations. In the latter connection it is noted that despite the lack of state legal requirements a "large number" of bus drivers had submitted to physical examinations within one year prior to the inquiry; and 43.6 per cent of the bus drivers, 15.8 per cent of the truck drivers and 26.4 per cent of the bus-truck drivers had had examinations less than one year previous to the study. No examination whatever was reported to have been taken by 30.6 per cent of the bus drivers, 73 per cent of the truck drivers and 40.9 per cent of the bus-truck drivers. Relatively more of the owner-drivers than drivers as a whole were in the latter groups.

Rate Differentials Harmful to South

(Continued from page 259)

modern railroad engineering. Both actual and potential southern manufacturers are hampered because attractive markets are restricted by the existence of a barrier that is now completely artificial. The southern producer, attempting to build up a large-scale production on the decreasing cost principle, finds his goods barred from the wider markets in the nation's most populous area. In marketing his products over the wall he is forced to absorb the differences in freight charges.

"Two chief reasons for higher freight rates have disappeared. One was the greater expense of railroading in the South, due to physical difficulties. This has been minimized by modern engineering. Another was the comparative lack of traffic that prevented the spreading of the cost. This no longer is the case, since many important southern roads have as great a traffic density as those above the Ohio river. The operating costs of southern lines today are lower than those in the eastern territory.

"The artificial rate structure handicaps the South in its efforts to expand and diversify its industry. For example, under present conditions it is cheaper to concentrate and ship the South's zinc ore to the North, where it is made into metallic zinc, used to coat northern steel and shipped back to the South for its "tin" roofs and other galvanized ironware, than it is to convert this zinc ore in the South without the economic loss of cross hauling.

"An equally serious deterrent to the South's economic development has been the nation's traditional high tariff policy. . . . The South, in fact, has been caught in a vise that has kept it from moving along with the main stream of American economic life. On the one hand, the freight rates have hampered its industry; on the other hand, our high tariff has subsidized industry in other sections of the country at the expense of the South."

Equipment and Supplies

LOCOMOTIVES

THE CHICAGO, ROCK ISLAND & PACIFIC has entered into a contract with the Electro-Motive Corporation for the leasing of 16 Diesel-electric locomotives, with an option to buy, thereby bringing the total contracted for to 37, including 10 leased in April and 11 in March. Of the 37, twenty-nine are 600 hp. and eight are 900 hp.

FREIGHT CARS

THE CHICAGO GREAT WESTERN has entered into a contract with the Pullman-Standard Car Manufacturing Company for the leasing of 50 light-weight, all-welded, steel box cars of 50 tons capacity, with an option to buy.

PASSENGER CARS

THE SOUTHERN RAILWAY is asking for bids on six Diesel-electric powered, two-car passenger trains. It was previously reported in the *Railway Age* of April 30, page 783, and August 6, page 231, that this road was contemplating the purchase of such equipment.

MISCELLANEOUS

NEW YORK CENTRAL.—Proceeds of this road's proposed \$5,000,000 "work loan" (see item in Financial columns) would be used for maintenance and improvements of lines and equipment involving an estimated 2,490,000 man-hours of re-employment. The work will include the laying of 28,600 tons of rail and fastenings, repairs to 185 locomotives, 300 passenger cars and 1,000 freight cars. The foregoing, it is estimated, will cost \$5,499,382 of which \$499,382 would be charged to capital account. The road has on hand and paid for \$200,000 of materials, so that the net additional outlay would be \$5,299,382.

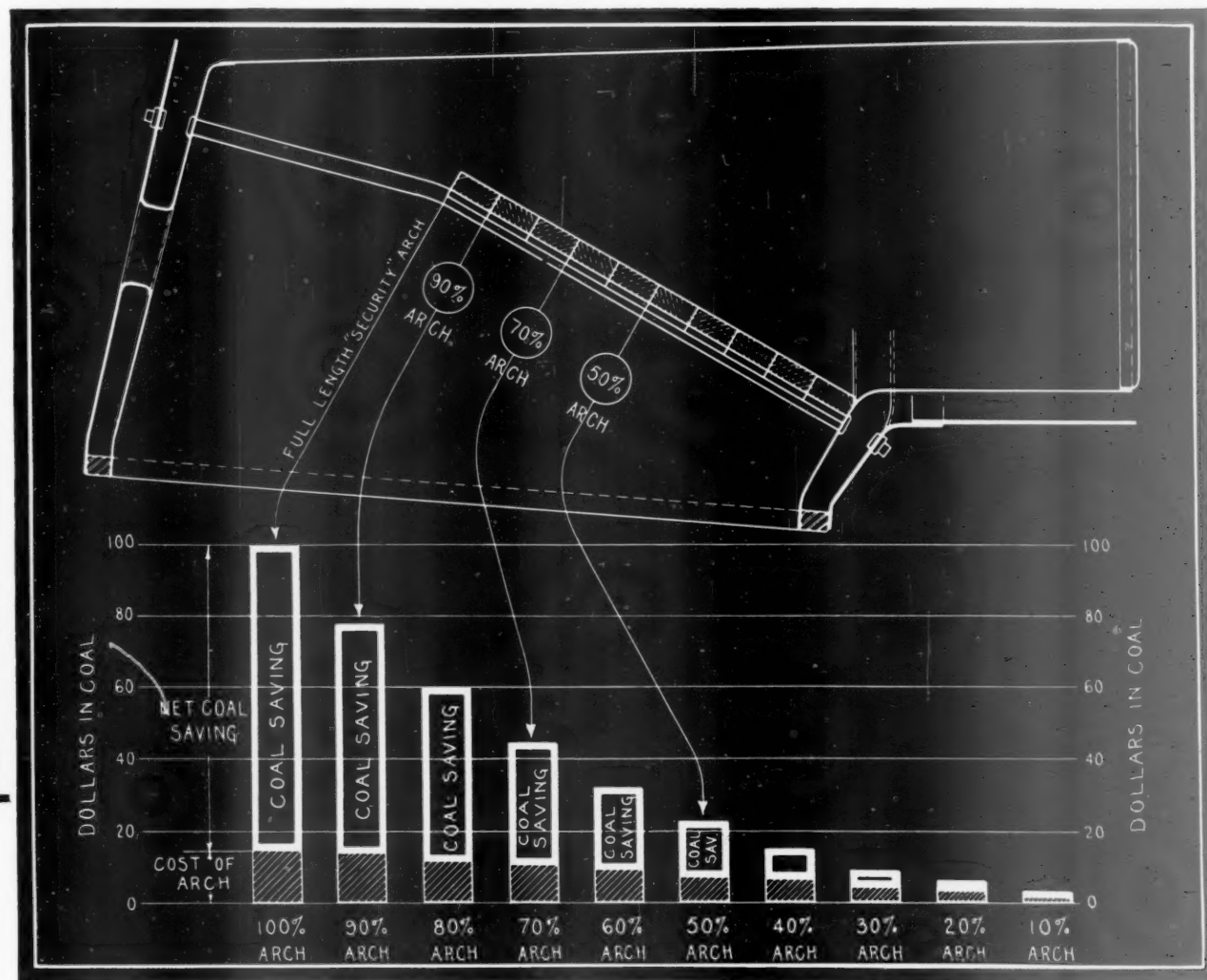
Construction

ATCHISON, TOPEKA & SANTA FE.—The Orange County California Flood Control District has awarded a contract to Person & Hollingsworth Company, Los Angeles, Cal., and Wilbur C. Cole, San Diego, Cal., jointly, for the relocation of the tracks of the Atchison, Topeka & Santa Fe and a state highway in the Santa Ana Canyon in the vicinity of the Prado Flood Control Basin. The cost of the work is estimated as \$241,183.

MOBILE & OHIO.—This company is constructing three unloading hoppers under a shed outside and alongside the present elevator at Mobile, Ala., to accommodate 40-ft. cars and is adding one shipping leg and one hopper scale so that cars can be

Continued on next left-hand page

Follow Thru On Economies



The Effect of Abbreviated Arches on Fuel Saving

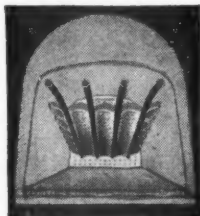
Apparent economies of the moment may turn into a net loss when followed thru to their conclusion.

« « « It may seem like saving money to cut down on the locomotive Arch or to skimp on Arch Brick. But every dollar thus "saved" costs ten in extra fuel. « « « This has been demonstrated repeatedly by tests on several roads involving various types of locomotives. « « « Economy is essential but it should be true economy that results in the greatest net return to the treasury. This calls for a 100% Arch on every locomotive.

There's More To SECURITY ARCHES Than Just Brick

**HARBISON-WALKER
REFRACTORIES CO.**

Refractory Specialists



**AMERICAN ARCH CO.
INCORPORATED**

60 EAST 42nd STREET, NEW YORK, N. Y.

**Locomotive Combustion
Specialists**

unloaded and ships loaded simultaneously. The work is estimated to cost \$50,000 while about \$5,000 additional will be spent on repairing present equipment. Alterations in the elevator are being made by Edwin Ahlskog, contracting engineer, Chicago.

Supply Trade

E. W. Provost, has resigned from **Iron & Steel Products, Inc.**, Hagewisch, Ill.

J. F. Linthicum, executive vice-president of the **American Lumber and Treating Company**, Chicago, has been elected president to succeed **R. M. Morriss**, who has been elected vice-president, in which capacity he will devote his attention to the promotion of treated lumber. **Harold H. Humphreys**, auditor of the company, has been elected secretary, succeeding **Roger L. Foote**, retired.

OBITUARY

Henry Laidlaw, special representative of the **Worthington Pump & Machinery Corporation**, with headquarters at Detroit, Mich., died in Kingsville, Ont., on June 25. His connection with predecessor companies started in 1887, when he went with the **Laidlaw-Dunn-Gordon Air Compressor Company**. In 1898, when the **International Steam Pump Company** was formed, absorbing the **Laidlaw-Dunn-Gordon Company**, he became sales manager of the Detroit district office. He continued in this capacity for the successor company, the **Worthington Pump & Machinery Corporation**, until 1927, when he was made special representative for the same office.

Fred Baskerfield, former general manager, railway department, **Crucible Steel Company of America**, with headquarters at Chicago, died on July 28 at his home in Los Angeles, Cal. Mr. Baskerfield was born in 1860 in Birmingham, England, and came to the United States in 1871. He entered the employ of **Park Brothers & Co.**, Black Diamond steel works, in 1886, as salesman in the Chicago office. He later was transferred to St. Louis, Mo., as St. Louis branch manager. In 1906 Mr. Baskerfield returned to Chicago and organized the Western railway department of the **Crucible Steel Company of America**, continuing in railway department work as manager of the Western railway department and general manager of the railway department until 1932, at which time he retired and moved to Los Angeles.

Thomas L. Mount, president of the **Thomas L. Mount Company**, New York, N. Y., died at his home in Bayhead, N. J., July 26. Mr. Mount was a pioneer in railway car lighting, his first connection with railroad activities being with the **Consolidated Axle Light Company**, where he saw successive service as draftsman, machinist, assistant chief engineer and vice-president. In 1919 he became associated

with the **Electro Dynamic Company**, Bayonne, N. J., and later in that year, he accepted a position with the **Electric Storage Battery Company**, Philadelphia, Pa. For four years prior to 1927, when he established his own firm, Mr. Mount was manager of the car lighting department of the **Electric Storage Battery Company**. In 1934, he was appointed representative in the eastern territory of **The Dayton Rubber Manufacturing Company**, Dayton, Ohio, which connection he maintained at the time of his death. Mr. Mount was a past president of the **Railway Electrical Supply Manufacturers' Association**.

Arthur W. Armstrong, president of the **Wood Preserving Corporation**, a subsidiary of the **Koppers Company**, with headquarters at Pittsburgh, Pa., died in St. Lukes Hospital, Chicago, on August 6, of pneumonia. He was born in Evanston, Ill., on April 9, 1885, and first worked in the freight department of the **Chicago & North Western** in 1903. In 1904 he entered the employ of the **Ayer & Lord Tie Company** in the general offices. In 1905 he returned to Northwestern University,



Arthur W. Armstrong

and upon graduation from that institution in 1907, was appointed superintendent of the **Ayer & Lord treating plant** at Grenada, Miss. Two years later he was made general auditor at Chicago. In 1915 he was appointed secretary and treasurer, which position he held until 1925, when he was appointed vice-president and general manager. In 1927 he was elected president and general manager. When the **Koppers Company** acquired an interest in the **Ayer & Lord Tie Company**, the **Century Wood Preserving Company**, the **National Lumber & Creosoting Company** and a number of other companies and formed the **Wood Preserving Corporation** in July, 1930, Mr. Armstrong became vice-president of that company and a member of its executive committee and in September, 1933, he was made president. At the time of his death, he was also president and a director of the **Carolina Wood Preserving Company**, the **Southern States Mineral Company** and the **National Lumber & Creosoting Company**. Mr. Armstrong has long taken an active part in the merchandising of treated timber and especially in developing outlets among the industries for ties that failed to meet the standards

of the railways. He has also been active in the work of the **Service Bureau of the American Wood Preservers Association**.

Financial

CENTRAL OF GEORGIA.—Abandonment.—Examiner R. Romero of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize the receiver to abandon a portion of a branch line extending from Metter, Ga., to Brewton, 47.4 miles.

CHICAGO, BURLINGTON & QUINCY.—Abandonment.—Examiner Jerome K. Lyle of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize this company to abandon a branch line extending in a general southerly direction from Koyle, Iowa, to Cainsville, Mo., 20.6 miles.

CHICAGO GREAT WESTERN.—Purchase.—The trustees have applied to the Interstate Commerce Commission for authority to purchase from the trustees of the **Chicago, Rock Island & Pacific** a line between Beverly, Mo., and Stillings Junction, 3.7 miles.

ERIE.—Reorganization.—Charles E. Denney and John A. Hadden, trustees of this road, have filed with the Interstate Commerce Commission applications for ratification of their appointments as trustees of the **New Jersey & New York**. Also, the commission has made public Mr. Hadden's request for ratification of his appointment as trustee of the **Nypano**; a similar application of Mr. Denney's was noted in the *Railway Age* of August 6. The commission has set August 18 as the date for further hearing at Washington, D. C., on the Erie reorganization; Examiner P. A. Conway will preside.

INDIAN VALLEY.—Abandonment.—This company has asked the Interstate Commerce Commission, for authority to abandon a line extending from Crescent Mills, Calif., to Engelmene, 13.2 miles.

MISSOURI PACIFIC.—Abandonment by New Iberia & Northern.—The Interstate Commerce Commission, Division 4, has authorized the trustee of the **New Iberia & Northern** to abandon the operation and the trustee of the **Iberia, St. Mary & Eastern** to abandon the line extending from Shadyside, La., to Patterson, 8.7 miles.

MONTGOMERY.—Abandonment.—This company has asked the Interstate Commerce Commission for authority to abandon its Coal Mine branch, also known as its Moon Run branch, extending from Groveton, Pa., to Moon Run, 5.6 miles.

NEW YORK CENTRAL.—Bank Loan with R. F. C. Guarantee.—This road has applied for Interstate Commerce Commission approval of a plan whereby it would obtain from the **National City Bank of New York** a \$5,000,000 "work loan" guaranteed by the **Reconstruction Finance Corporation**. The loan would be evidenced by a three-year promissory note or notes,

Sustained BOILER CAPACITY...

is an essential factor for present day locomotive performance.

To provide the maximum evaporating and superheating surfaces to meet this condition, the Type "E" superheater was developed.

For a given diameter boiler, the small tube, or Type "E" superheater, offers the best

arrangement of flue layout, superheating surface, draft conditions and simplicity.

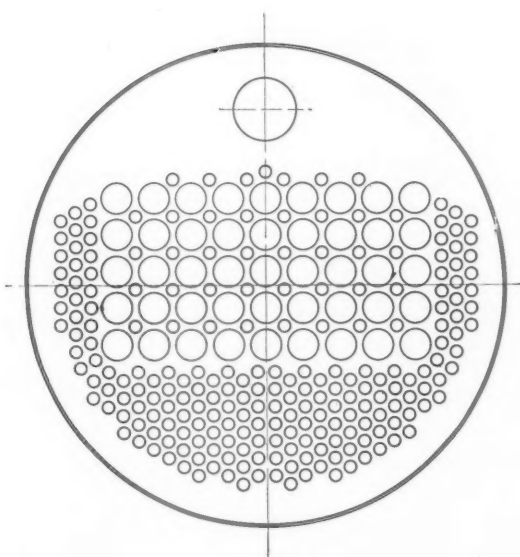
The Type "E" superheater is a vital part of the modern steam locomotive. It means higher sustained boiler capacity and efficiency.

**The
Superheater Company**
Representative of American Throttle Company, Inc.
60 East 42nd Street NEW YORK
122 S. Michigan Ave. CHICAGO

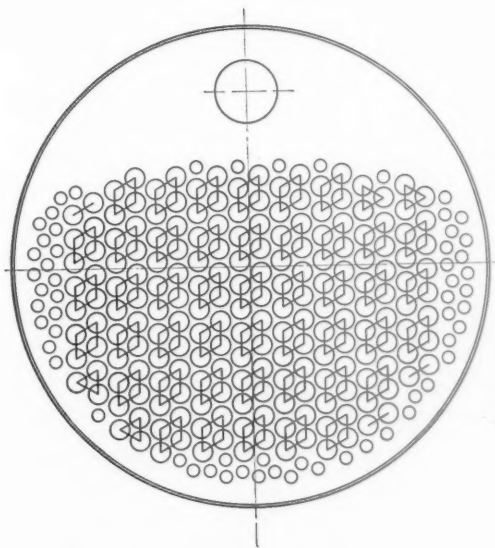


A-1248

Canada: The Superheater Company, Ltd., Montreal
Superheaters « Feed Water Heaters « American Throttles
Exhaust Steam Injectors « Pyrometers « Steam Dryers



Tubesheet Layout, Designed For a Large Tube Superheater



Same Tubesheet, But Designed For an Elesco Type "E" Superheater, To Provide Maximum Superheating and Evaporating Surfaces.

bearing interest at two per cent—1.5 per cent to National City and 0.5 per cent to R. F. C. in consideration of its guarantee. The proceeds would be used for maintenance and improvements to lines and equipment.

NEW YORK, NEW HAVEN & HARTFORD.—*Reorganization Petition for Boston & Providence.*—The Provident Institution for Savings in Boston has filed with the Interstate Commerce Commission a petition asking that the Boston & Providence be reorganized under Section 77 of the Bankruptcy Act. This institution owns all the company's funded debt, which consists of \$2,170,000 of 15-year debentures. The Boston & Providence is leased by the Old Colony which is operated as a part of the New Haven system.

Reorganization of B. & P.—District Judge F. J. W. Ford issued an order of notice on August 5 to stockholders, bondholders, mortgage trustees, and general creditors of the Boston & Providence, leased road, to consider the appointment of a separate trustee for the property. Notices are returnable August 22.

NEW YORK, ONTARIO & WESTERN.—*Remuneration of Trustee.*—The Interstate Commerce Commission, Division 4, has ordered that, subject to the approval of the court, Frederic E. Lyford shall receive compensation for his services as trustee at the rate of \$15,000 per year beginning as of July 1. Mr. Lyford's former salary was \$12,000 per year.

PENNSYLVANIA.—*Abandonment by Western New York & Pennsylvania.*—This company has applied to the Interstate Commerce Commission for authority to abandon the operation and the Western New York & Pennsylvania has applied for authority to abandon that portion of the latter's New Castle branch extending from Houston Junction, Pa., to Stoneboro, 12.3 miles, and a four mile side track known as Jackson Siding.

Purchase by Pennsylvania Truck Lines, Inc.—The Pennsylvania Truck Lines, Inc., have asked the Interstate Commerce Commission for authority to purchase certain property of the Central Motor Freight Lines, Inc., in Pennsylvania.

RAILWAY EXPRESS AGENCY.—*Purchase of Southeastern Express.*—This company has formally applied to the Interstate Commerce Commission for authority to purchase the equipment of the Southeastern Express. In a recent decision the commission approved the merger of these two companies into the R. E. A. This company has also asked the commission to permit it to operate its trucks over the same routes as those served by the Southeastern.

SEABOARD AIR LINE.—*Securities of the Tavares & Gulf.*—The Interstate Commerce Commission, Division 4, has authorized the Tavares & Gulf to (1) extend to March 1, 1948, the maturity date of \$425,000 of first mortgage 10 year five per cent bonds, series A, with interest at the rate of three per cent from March 1, 1937; and (2) to issue 482 shares of capital stock of the par value of \$100 a share, to be

delivered to the receivers of the Seaboard Air Line in payment of indebtedness due that company amounting to \$67,800.

SOUTHERN.—*Bonds.*—The Interstate Commerce Commission, Division 4, has authorized this company to issue \$4,500,000 of first consolidated mortgage five per cent bonds to be sold to the Reconstruction Finance Corporation and the proceeds used for retirement of a like amount of East Tennessee Reorganization mortgage bonds, maturing September 1.

SUSQUEHANNA RIVER & WESTERN.—*Abandonment.*—This road has applied to the Interstate Commerce Commission for authority to abandon the 2.68-mile section of its line between New Bloomfield, Pa., and Bloomfield Junction.

UNION PACIFIC.—*Abandonment and Acquisition.*—The Interstate Commerce Commission, Division 4, has authorized this company to abandon 32.4 miles of line in Keith and Garden Counties, Nebraska. The commission has also granted this company authority to acquire from the Central Nebraska Public Power & Irrigation District, 33.2 miles of new line running in the same general direction as the portion to be abandoned.

UNION PACIFIC.—*Abandonment and Joint Operation.*—The Oregon-Washington Railroad & Navigation Company has applied to the Interstate Commerce Commission for authority to abandon its 7.73-mile line between Waitsburg, Wash., and Dayton, except for certain tracks to be retained for serving industries in connection with operations over the "closely-parallel" Waitsburg-Dayton line of the Northern Pacific. Approval of joint operating arrangements on the N. P. line is sought in an accompanying application.

WAYNESBURG & WASHINGTON.—*Abandonment.*—This company has asked the Interstate Commerce Commission for authority to abandon a line between Hackney, Pa., and Washington, 13 miles. The company has pending an application for permission to construct a new track which would relocate the tracks to be abandoned.

WILKES BARRE & EASTERN.—*Remuneration of Counsel.*—The Interstate Commerce Commission, Division 4, has ordered that David Schwartz shall receive compensation at the rate of \$4,000 a year while he is acting as counsel to the trustee of this company.

YADKIN.—*Abandonment.*—Examiner R. Romero of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize this company to abandon that part of its line extending from Albemarle, N. C., to Norwood, 9.5 miles.

Dividends Declared

Cincinnati, New Orleans & Texas Pacific. — Preferred, \$1.25, quarterly, payable September 1 to holders of record August 15.

Average Prices of Stocks and Bonds

	Aug. 9	Last week	Last year
Average price of 20 representative railway stocks..	29.70	28.87	51.35
Average price of 20 representative railway bonds..	59.79	61.42	79.83

Railway Officers

EXECUTIVE

N. A. Williams, general manager, Eastern district, of the Union Pacific, with headquarters at Omaha, Neb., has been elected president of the Denver Union Terminal at the annual meeting of the directors at Denver, Colo., August 2. Members of the executive committee elected for the coming year were: Mr. Williams, **Robert Rice**, vice-president and general manager of the Colorado & Southern, and **E. A. West**, general manager of the Denver & Rio Grande Western.

John C. Gale, whose appointment as assistant to the president on the Union Pacific, with headquarters at Omaha, Neb., was reported in the *Railway Age* of July 30, was born at Canton, Ill., on February 11, 1880, and entered railway service on July 8, 1905, as a switchman on the Union



John C. Gale

Pacific at Rock Springs, Wyo. He became a watchman and special agent on the Denver & Rio Grande Western on February 5, 1908, but later that year returned to the Union Pacific as a watchman. Mr. Gale subsequently served as a traveling watchman and an assistant special agent, and on July 15, 1916, he was promoted to special agent of the Nebraska division, with headquarters at Omaha. He was advanced to chief special agent at Omaha on March 1, 1917, and has held that position until his recent appointment.

OPERATING

A. Sturrock, master mechanic of the Esquimalt & Nanaimo, at Victoria, B. C., has been appointed assistant superintendent with the same headquarters.

R. S. James, system assistant trainmaster of the Denver & Rio Grande Western has been promoted to inspector of transportation with headquarters at Denver, Colo.

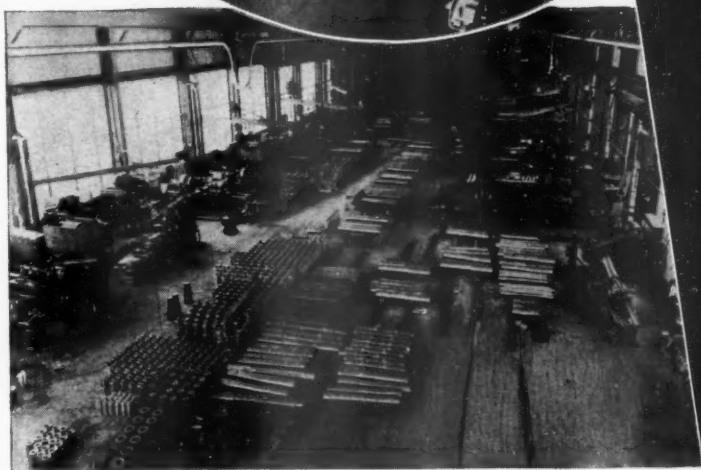
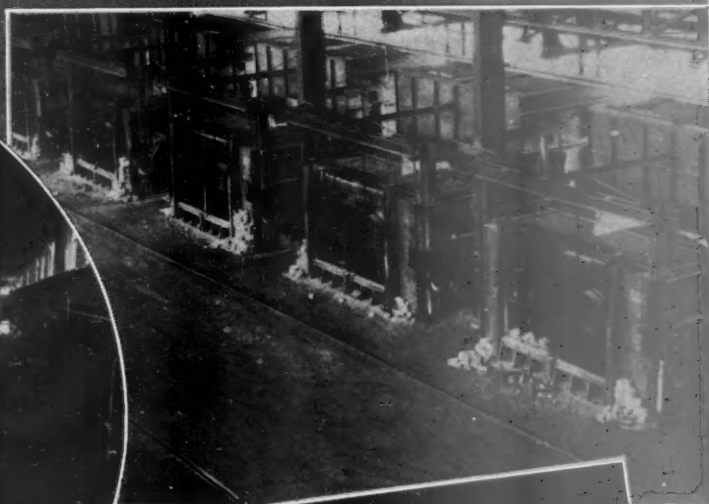
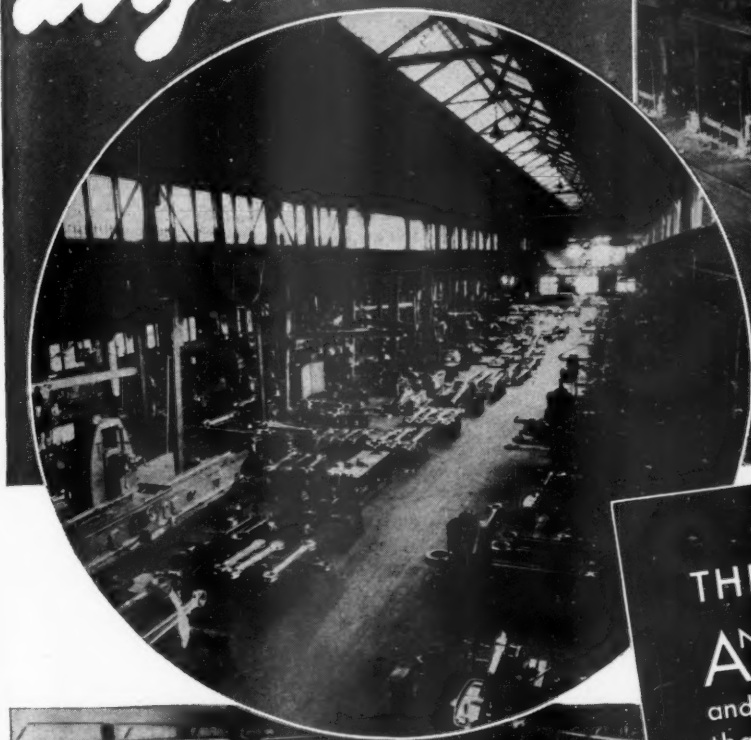
S. J. Hale, assistant superintendent of the Shenandoah division of the Norfolk & Western, with headquarters at Roanoke,

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HIGHER AND HIGHER SPEEDS

DEMAND

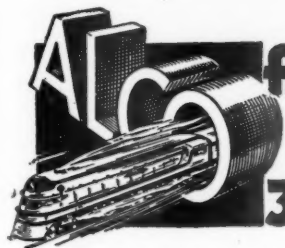
Light Weight Forgings



THEN ONLY THE BEST—

AND to get the best you must look to the maker with long experience and a skilled and trained personnel, one that keeps pace with locomotive advancement—with complete research, testing laboratories—and a plant equipped with the latest specialized manufacturing facilities. Because you need them all for utmost in reliability and operating economies.

Alco has this unusual set-up—with a century of experience . . . everything to render the railroads a high grade service on light-weight forgings—uniform quality—precision manufacture—good delivery—reasonable prices.



AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET • NEW YORK • N.Y.

Va., has been transferred to the Pocomantas division with headquarters at Bluefield, W. Va.

C. T. Montgomery, assistant superintendent of the New Glasgow division of the Canadian National with headquarters at New Glasgow, N. S., has been promoted to superintendent of this division succeeding **J. J. MacLeod**, and has been succeeded by **F. E. Tibbetts**.

C. T. Rowley, assistant train rules examiner on the Chicago, Rock Island and Pacific at Kansas City, Mo., has been appointed trainmaster, with headquarters at Des Moines, Iowa, succeeding **C. H. Anderson**, who has been appointed transportation inspector at Chicago, a newly created position.

C. L. Simonds, trainmaster on the Chicago, Rock Island & Pacific with headquarters at Goodland, Kan., has been promoted to assistant superintendent at Minneapolis, Minn., succeeding **A. C. Bradley**, assigned to other duties. The position of trainmaster at Goodland, Kan., has been abolished.

J. C. Jones, roadmaster on the Canadian Pacific, with headquarters at Regina, Sask., has been promoted to assistant superintendent, Saskatoon division, with headquarters at Wynyard, Sask., succeeding **E. J. Worth**, who has been transferred to the Regina division, with headquarters at Regina, Sask., replacing **W. M. Ansley**, retired.

B. H. Decker, assistant superintendent of transportation of the Denver & Rio Grande Western, with headquarters at Denver, Colo., has been promoted to superintendent of the Grand Junction Division, with headquarters at Grand Junction, Colo., to succeed **W. H. McPherson**, who has been appointed assistant superintendent of transportation at Denver.

Walter D. Pearce, who has been promoted to division superintendent of the Northern Pacific, with headquarters at Glendive, Mont., as announced in the *Railway Age* of August 6, was born in 1886 at Ligonier, Ind. After attending Purdue University he entered railway service with the Northern Pacific in May, 1906. In 1909 he was appointed assistant engineer at Jamestown, N. D., in 1911 assistant engineer at Duluth, Minn., and in 1915 supervisor of bridges and buildings at Glendive, Mont. He held the latter position until 1918, when he was promoted to trainmaster at Forsyth, Mont., and in 1922 he was promoted to general manager of the Walla Walla Valley Ry. Company, a subsidiary of the Northern Pacific. In 1926 he was appointed assistant superintendent, with headquarters at Duluth, Minn., and in 1930 was transferred to St. Paul, Minn., which position he had held until his recent promotion.

TRAFFIC

B. F. Rice has been appointed acting general coal and coke freight agent of the

Wabash with headquarters at St. Louis, Mo., to succeed **T. R. Farrell** who has been granted a leave of absence because of illness.

Harry W. Von Willer, whose promotion to assistant freight traffic manager on the Erie, with headquarters at Cleveland, Ohio, was reported in the *Railway Age* of July 30, was born at Greensburg, Ind., on August 11, 1896, and first entered railway service in 1915 on the Cleveland, Cincinnati, Chicago & St. Louis. In 1923 he went with the Erie as chief clerk at Indianapolis, Ind., and in 1926 he was appointed commercial agent at that point. The following year he was promoted to general agent at Springfield, Ohio, and in 1930 he was transferred to Minneapolis, Minn. Mr. Von Willer was advanced to division freight agent at Youngstown, Ohio, in September, 1931, and in September, 1935, he was promoted to assistant



Harry W. Von Willer

general freight agent at Pittsburgh, Pa., the position he held before his recent promotion.

ENGINEERING AND SIGNALING

L. H. Bond, engineer maintenance of way of the Illinois Central, with headquarters at Chicago, has been appointed chief engineer maintenance of way with the same headquarters.

MECHANICAL

George H. Lickert, fuel engineer for the Union Pacific, has retired, after 37 years' service in capacities ranging from machinist to master mechanic.

E. C. Mitchell has been appointed motive power inspector of the Huntington division of the Chesapeake & Ohio, with headquarters at Huntington, W. Va., succeeding **S. E. Fulks**, whose promotion to road foreman of engines was noted in the *Railway Age* of August 6.

Alvin R. Ruiter, whose promotion to assistant chief operating officer, mechanical, of the Chicago, Rock Island & Pacific was announced in the *Railway Age* of July 30, was born at Dumont, Iowa,

on January 26, 1880, and entered railway service on the Rock Island as a machinist at Valley Junction, Iowa, on November 19,



Alvin R. Ruiter

1906. He later served as a machinist foreman and roundhouse foreman and on January 1, 1913, was promoted to general foreman at Valley Junction. On June 1, 1915, he was transferred to Silvis, Ill., and was later appointed master mechanic at Armourdale, Kan. Mr. Ruiter served in the latter capacity at Armourdale, Chickasha, Okla., and Shawnee, Okla., and was master mechanic at Armourdale at the time of his recent promotion.

Stephen E. Mueller, whose promotion to superintendent of motive power, second mechanical district, of the Chicago, Rock Island & Pacific, with headquarters at Kansas City, Mo., was reported in *Railway Age* of July 30, was born at St. Louis, Mo., on January 31, 1885, and began railway service with the Rock Island on December 21, 1907, as a roundhouse foreman at Rock Island, Ill. On June 1, 1910, he was promoted to general foreman at Fairbury, Neb., and later served as a general foreman at Rock Island and Cedar



Stephen E. Mueller

Rapids, Iowa. On October 1, 1919, he was advanced to master mechanic at Estherville, Iowa, and on February 15, 1920, he was promoted to assistant superintendent of shops at Silvis, Ill. Mr. Mueller was

Continued on next left-hand page

"THERE'S A REAL

Quality Story

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Here is one of the machines Gulf's technical men have devised for testing lubricating oils. The oil, mixed with water, is circulated rapidly through the machine while a stream of oxygen is whipped thoroughly into it. Many oils have been tested with this instrument but none have shown stability equal to Gulf's higher quality oils.

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GENERAL OFFICES, PITTSBURGH, PA.



advanced to superintendent of shops at Silvis, Ill., on July 1, 1922, the position he held at the time of his recent promotion.

Nicholas McLean Trapnell, who has been appointed assistant to superintendent motive power of the Chesapeake & Ohio at Richmond, Va., was born on December 30, 1900, at Elizabeth, N. J. He was graduated from Stevens Preparatory School,



N. M. Trapnell

Hoboken, N. J., and studied mechanical engineering at Stevens Institute of Technology. Mr. Trapnell entered railroad service in July, 1919, as machinist helper with the Coal & Coke Railway at Gassaway, W. Va. In February, 1921, he became junior marine engineer for the U. S. Shipping Board and later for the Barber Steamship Company. In April, 1922, he was appointed machinist, Meadows shops, New York division, Pennsylvania Railroad, and in September, 1924, became draftsman for the Weston Electrical In-

strument Company at Newark, N. J., later serving as mechanical engineer for the latter firm. In December, 1928, Mr. Trapnell was appointed assistant engineer, operating department, Chesapeake & Ohio, at Richmond, becoming special engineer on the staff of the vice-president and general manager in April, 1933. He was appointed mechanical engineer in August, 1936, the position he held until his recent appointment as assistant to superintendent motive power.

SPECIAL

John J. Heavey, safety supervisor of the Erie, with headquarters at Huntington, Ind., retired July 13.

Dr. J. Frederick Langdon, chief of the staff of St. Catherine's Hospital and associate professor of surgery at Creighton University, Omaha, Neb., has been appointed district surgeon for the Union Pacific, to succeed Dr. C. R. Kennedy, deceased.

OBITUARY

Joseph M. Bryson, general counsel of the Missouri-Kansas-Texas, with headquarters at St. Louis, Mo., died on August 8, after a short illness.

F. W. Gilcreast, former consulting engineer of the Lehigh & New England, died on July 16, at his home in Bethlehem, Pa. Mr. Gilcreast was retired on April 1, 1936.

Samuel M. Rankin, former manager of mail and express traffic of the Pennsylvania, with headquarters at Philadelphia, Pa., died on August 8, his 67th birthday, after several months illness.

Nelson Edward Gutelius, assistant engineer maintenance of way of the Canadian Pacific, with headquarters at Toronto, Ont., died on July 30 from a

heart attack, at his home in that city. He was 54 years old.

Harry G. Taylor, Commissioner of Western Railroads and chairman of the Western Association of Railway Executives, Chicago, died on August 10, in Evanston, Illinois, of heart trouble from which he had been ailing for several months.

Albert S. Twombly, superintendent of the Portland division of the Boston & Maine, who died on July 16 at the age of 58 years, was born at Dover, N. H., on April 2, 1880. Mr. Twombly entered the service of the Boston & Maine as a freight handler on August 8, 1898. He was appointed successively yard clerk, yard brakeman, freight brakeman, freight conductor and traveling conductor. In 1914 he was appointed trainmaster and in 1922 he became assistant superintendent. Mr. Twombly had served as superintendent of the Portland division since April 1, 1928.

J. G. Sullivan, who retired as chief engineer of the Western lines of the Canadian Pacific in 1918 and who since that time has been in consulting engineering practice at Winnipeg, Man., died suddenly in that city on August 7 at the age of 75 years. Mr. Sullivan entered the employ of the Canadian Pacific in 1900. From 1905 to 1907 he was assistant chief engineer of the construction of the Panama Canal, returning to the Canadian Pacific in the latter year. He was in charge of the Canadian government's survey for a railroad outlet for the Peace river valley in 1922. Among the notable structures built under his direction was the five-mile Connaught tunnel of the Canadian Pacific, through the Selkirk mountains near Glacier, B. C. Mr. Sullivan was long active in the work of the American Railway Engineers' Association, of which organization he was president in 1917-18 and was made an honorary member at the last convention.

* * * *

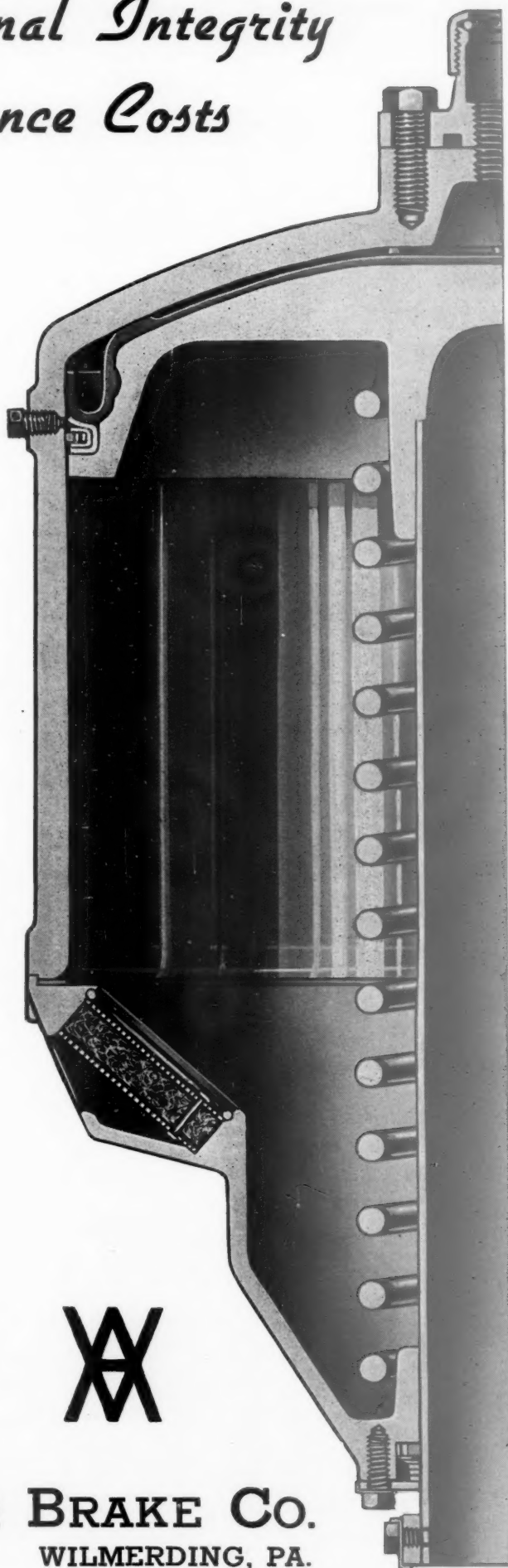


Photo by R. H. Kennedy, Jr.

The C. & E. I.'s "Dixieland" Pulls Out of Danville, Ill.

For Higher Functional Integrity and Lower Maintenance Costs

The Type "UA" Brake Cylinder has the following outstanding characteristics that provide for better and longer service . . . Re-enforced flanged union insures tight pipe connection . . . Pressure head integral with body reduces clearance volume, eliminates gasket, and hence a possible source of leakage . . . "Snap-on" WABCO packing cup eliminates follower plates and bolts, reduces leakage, and simplifies replacement . . . Tight-fitting rings and a grease-packed felt swab around hollow rod, a gasket between head and body, and a cartridge type strainer in the required "breather" opening, prevent entrance of dust at the non-pressure end . . . A grease-filled groove and grease-soaked felt swab spread lubricant over the cylinder walls at each piston stroke. Grease grooves in piston and around hollow rod may be refilled by grease-gun, through tapped openings, without dismantling cylinder . . . The advantages of this cylinder have been amply demonstrated by the many now in service, and it merits a more wide-spread application. . . .



WESTINGHOUSE AIR BRAKE CO.
General Office and Works: WILMERDING, PA.

Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of May,

Region, road, and year	Miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Number of road locomotives on line					
			Principal and helper	Light	Loaded (thous- ands)	Per cent loaded	Gross, excluding locomotives and tenders	Net, revenue and non-revenue	Serviceable		Un-service- able	Per cent un-service- able		
									Not stored	Stored				
New England Region:														
Boston & Albany	1938	374	108,657	113,281	8,150	2,546	66.8	140,572	47,893	47	10	33	36.7	
.....	1937	374	145,797	150,634	9,703	3,420	67.9	187,199	65,746	59	17	15	16.5	
Boston & Maine	1938	1,941	234,144	258,265	21,326	8,394	70.4	458,813	170,258	118	4	128	51.2	
.....	1937	1,941	285,292	322,057	28,713	10,860	72.3	578,342	219,289	127	1	138	51.9	
N. Y., New Hav. & Hartf.	1938	1,997	297,796	374,727	19,720	10,148	65.2	561,639	203,005	167	22	84	30.7	
.....	1937	2,016	366,954	459,601	30,585	13,271	69.4	700,668	263,221	196	5	73	26.2	
Great Lakes Region:														
Delaware & Hudson	1938	830	197,238	261,193	23,128	6,575	63.2	412,757	191,849	101	120	40	15.3	
.....	1937	830	240,829	327,897	37,197	8,897	67.1	538,615	257,976	93	149	33	12.0	
Del., Lack. & Western.....	1938	983	308,031	347,242	52,647	10,628	66.2	636,764	249,425	120	15	88	39.5	
.....	1937	983	403,308	449,990	59,800	14,145	68.0	828,285	336,930	126	14	84	37.5	
Erie (incl. Chi. & Erie).....	1938	2,276	542,104	580,316	36,484	23,781	65.7	1,429,321	526,462	197	60	213	45.3	
.....	1937	2,284	724,465	765,893	41,036	31,949	67.1	1,890,778	735,022	250	17	204	43.3	
Grand Trunk Western.....	1938	1,027	209,177	210,687	1,435	5,244	59.5	326,037	104,677	64	4	46	40.4	
.....	1937	1,027	283,918	286,208	3,077	8,277	65.2	484,135	170,743	84	..	50	37.3	
Lehigh Valley	1938	1,288	273,485	302,711	39,266	10,917	65.2	687,102	289,031	116	3	137	53.5	
.....	1937	1,303	383,231	419,682	47,830	14,491	66.6	892,443	381,854	148	7	128	46.2	
New York Central.....	1938	10,651	2,138,174	2,238,470	122,469	68,655	59.2	4,492,687	1,722,755	700	314	477	32.0	
.....	1937	10,748	2,937,893	3,096,007	193,986	102,117	61.0	6,585,209	2,643,236	885	210	389	26.2	
N. Y., Chicago & St. Louis.....	1938	1,672	436,260	441,594	5,098	14,839	61.8	882,205	297,229	137	27	34	17.2	
.....	1937	1,672	521,309	527,253	6,769	18,664	66.9	1,087,195	415,330	173	1	21	10.8	
Pere Marquette	1938	2,081	268,859	277,892	5,605	6,956	59.5	449,584	160,544	91	31	43	26.1	
.....	1937	2,081	389,081	403,686	5,395	10,679	60.7	663,019	244,110	121	3	27	17.9	
Pittsburgh & Lake Erie.....	1938	233	47,780	48,719	..	1,881	54.3	163,424	85,267	22	13	37	51.4	
.....	1937	234	98,250	100,834	..	3,646	61.2	309,072	174,701	25	20	24	34.8	
Wabash	1938	2,421	494,411	504,602	10,725	15,197	63.4	898,965	295,112	129	20	142	48.8	
.....	1937	2,421	600,207	610,647	12,096	18,850	66.6	1,069,682	372,458	143	29	118	40.7	
Central Eastern Region:														
Baltimore & Ohio.....	1938	6,314	1,162,148	1,409,853	138,194	34,737	60.9	2,343,986	988,701	523	186	559	44.1	
.....	1937	6,351	1,651,083	2,017,404	213,975	52,622	64.2	3,565,075	1,648,091	718	34	519	40.8	
Central of New Jersey.....	1938	678	134,984	153,270	28,105	4,321	59.1	306,137	142,454	72	5	79	50.6	
.....	1937	681	178,108	199,307	42,716	5,835	59.9	403,456	190,161	67	5	67	48.2	
Chicago & Eastern Illinois.....	1938	927	157,423	157,722	2,585	3,695	65.7	220,306	87,742	54	..	51	48.6	
.....	1937	931	184,776	185,077	2,959	4,916	67.6	288,900	115,038	53	2	47	46.1	
Elgin, Joliet & Eastern*....	1938	435	74,164	74,891	618	1,643	58.9	120,944	50,037	47	4	32	38.6	
.....	1937	435	114,914	116,921	2,563	3,080	61.6	233,840	117,017	61	3	18	22.0	
Long Island	1938	390	25,746	26,612	15,041	279	52.6	21,382	8,641	27	13	7	14.9	
.....	1937	393	31,689	32,545	17,046	323	50.9	25,389	10,256	34	6	10	20.0	
Pennsylvania System	1938	10,023	2,153,924	2,570,290	285,310	81,259	60.8	5,370,772	2,197,552	1,062	507	804	33.9	
.....	1937	10,027	3,410,553	3,904,860	428,551	121,476	62.8	8,261,223	3,724,142	1,604	242	476	20.5	
Reading	1938	1,444	335,706	373,659	46,232	9,596	60.6	696,493	330,143	167	40	134	39.3	
.....	1937	1,445	439,810	491,007	56,950	12,964	62.7	909,559	431,478	205	33	95	28.5	
Pocahontas Region:														
Chesapeake & Ohio	1938	3,050	684,303	711,682	28,138	28,647	55.6	2,375,740	1,260,855	302	102	141	25.9	
.....	1937	3,050	882,139	926,817	39,775	41,017	57.0	3,372,045	1,820,694	410	39	105	19.0	
Norfolk & Western.....	1938	1,178	502,260	516,156	23,240	18,562	57.3	1,468,176	725,312	247	86	40	10.7	
.....	1937	2,181	672,786	714,232	37,333	28,503	59.5	2,327,443	1,231,520	234	108	19	5.3	
Southern Region:														
Atlantic Coast Line.....	1938	5,079	586,223	598,694	8,661	13,290	62.3	748,810	242,732	251	26	90	24.5	
.....	1937	5,116	649,744	650,679	8,890	14,746	62.4	807,426	282,430	235	36	102	27.3	
Central of Georgia.....	1938	1,886	238,569	242,913	3,832	4,971	71.0	280,591	106,890	94	..	31	24.8	
.....	1937	1,886	272,861	279,826	4,166	6,146	72.9	334,320	132,524	104	..	22	17.5	
Illinois Central (incl. Y. & M. V.).....	1938	6,541	1,263,595	1,269,186	22,621	32,572	60.4	2,070,366	786,633	610	17	235	27.3	
.....	1937	6,547	1,644,232	1,672,016	31,041	40,542	64.4	2,471,541	969,593	712	16	163	18.3	
Louisville & Nashville.....	1938	4,929	1,041,542	1,114,089	23,009	23,695	58.8	1,628,885	692,254	325	33	195	35.3	
.....	1937	4,931	1,306,109	1,411,525	35,068	31,103	59.3	2,174,071	988,176	393	12	156	27.8	
Seaboard Air Line.....	1938	4,305	496,093	513,127	5,125	12,396	60.9	751,910	249,690	207	28	68	22.4	
.....	1937	4,295	543,825	569,562	5,423	14,131	66.5	813,609	299,637	243	4	63	20.3	
Southern	1938	6,561	1,128,697	1,145,194	16,618	24,366	64.4	1,427,776	547,475	492	2	249	33.5	
.....	1937	6,596	1,337,029	1,358,998	20,263	30,598	68.7	1,697,870	685,225	494	10	265	34.5	
Northwestern Region:														
Chicago & North Western.....	1938	8,388	715,069	734,737	17,338	20,390	66.4	1,224,360	448,646	284	211	208	29.6	
.....	1937	8,397	948,097	978,472	21,917	25,958	65.4	1,579,306	623,016	394	67	203	30.6	
Chicago Great Western.....	1938	1,450	214,470	214,554	7,290	6,125	61.5	373,806	132,670	60	3	25	28.4	
.....	1937	1,450	273,774	274,481	4,066	8,013	64.0	480,690	177,632	68	1	24	25.8	
Chi., Milw., St. P. & Pac.....	1938	10,943	1,077,942	1,110,327	33,728	28,370	61.8	1,795,511	694,273	422	130	159	22.4	
.....	1937	11,107	1,322,794	1,428,403	62,216	37,911	63.7	2,346,287	939,651	436	126	103	15.5	
Chi., St. P., Minneap. & Om.....	1938	1,636	191,119	196,569	8,132	4,203	67.3	253,673	106,343	97	29	15	10.6	
.....	1937	1,636	223,004	230,301	10,643	5,259	67.1	318,879	130,878	88	38	16	11.3	
Great Northern	1938	7,976	601,516	588,878	21,003	18,854	68.6	1,173,979	498,987	304	87	156	28.5	
.....	1937	7,997	819,422	816,104	31,149	30,823	61.6	2,151,452	1,015,867	349	66	148	26.3	
Minneap., St. P. & S. St. M.....	1938	4,273	339,279	341,659	1,564	6,591	65.3	384,162	147,436	112	1	43	27.6	
.....	1937	4,278	393,969	400,676	4,277	9,598	69.4	556,601	240,904	120	..	27	18.4	
Northern Pacific	1938	6,423	550,182	571,919	27,022	17,231	67.1	1,034,277	417,361	282	81	90	19.9	
.....	1937	6,429	689,011	750,615	37,700	22,884	67.6	1,380,701	589,802	382	6	84	17.8	
Central Western Region:														
Alton	1938	912	184,604	191,388	771	3,751	57.2	248,255	91,035	58	13	31	30.4	
.....	1937	912	216,292	229,710	2,087	4,879	59.8	316,684	115,009	70	..	25	26.3	
Atch., Top. & S. Fe (incl. G.C. & S.F. & P. & S.F.).....	1938	13,512	1,647,165	1,775,324	80,623	45,429	61.6	2,877,093	912,474	557	66			

1938, Compared with May, 1937, for Roads with Annual Operating Revenues Above \$25,000,000

Region, road, and year	Number of freight cars on line			Percent un-servicable	Gross ton-miles per train-hour, excluding locomotives and tenders		Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day	
	Home	Foreign	Total		Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders								
New England Region:														
Boston & Albany	1938	979	3,813	4,792	3.2	21,478	1,302	444	18.8	329	26.7	4,131	162	46.4
	1937	2,296	4,241	6,537	24.1	21,790	1,293	454	19.2	326	25.0	5,671	160	60.3
Boston & Maine	1938	8,480	7,367	15,847	12.9	26,978	1,966	730	20.3	366	25.6	2,830	94	39.3
	1937	7,311	8,746	16,057	13.2	28,151	2,034	771	20.2	449	30.8	3,644	97	45.5
N. Y., New Hav. & Hartf..	1938	11,478	9,467	20,945	16.4	28,308	1,916	692	20.0	325	24.9	3,279	97	51.3
	1937	9,383	12,536	21,919	13.4	27,200	1,943	730	19.8	378	27.4	4,212	103	64.9
Great Lakes Region:														
Delaware & Hudson	1938	7,531	2,662	10,193	6.2	30,377	2,103	978	29.2	563	30.5	7,456	103	37.0
	1937	7,495	3,868	11,363	6.0	31,639	2,246	1,076	29.0	709	36.4	10,023	104	48.0
Del., Lack. & Western....	1938	13,393	4,879	18,272	16.9	34,686	2,099	822	23.5	432	27.9	8,185	132	63.6
	1937	13,130	7,191	20,321	11.9	34,103	2,082	847	23.8	527	32.5	11,057	129	78.7
Erie (incl. Chi. & Erie)....	1938	18,012	10,171	28,183	10.0	44,090	2,655	978	22.1	578	39.7	7,462	92	47.3
	1937	15,700	16,972	32,672	4.8	43,860	2,628	1,022	23.0	701	45.4	10,381	94	61.2
Grand Trunk Western.....	1938	6,315	4,016	10,331	18.2	33,344	1,563	502	20.0	342	28.8	3,288	96	63.3
	1937	4,499	7,173	11,672	16.1	33,613	1,718	606	20.6	453	33.6	5,362	90	75.6
Lehigh Valley	1938	10,729	8,293	19,022	12.6	46,062	2,545	1,071	26.5	497	28.7	7,239	106	44.9
	1937	10,408	10,234	20,642	8.5	41,608	2,371	1,015	26.4	564	32.1	9,453	111	58.2
New York Central.....	1938	102,890	53,170	156,060	19.5	36,892	2,118	812	25.1	359	24.2	5,218	100	57.6
	1937	90,729	70,858	161,587	14.6	39,092	2,267	910	25.9	524	33.2	7,933	97	80.1
N. Y., Chicago & St. Louis.	1938	7,880	5,483	13,363	6.6	40,250	2,025	682	20.0	701	56.7	5,734	84	77.9
	1937	5,835	8,447	14,282	4.1	38,794	2,092	799	22.3	957	64.3	8,013	88	94.9
Pere Marquette	1938	11,141	4,447	15,588	4.9	28,097	1,672	597	23.1	330	24.1	2,489	91	61.3
	1937	7,991	7,206	15,197	3.6	28,506	1,705	628	22.9	514	37.0	3,784	89	95.6
Pittsburgh & Lake Erie....	1938	9,209	8,196	17,405	33.4	48,523	3,420	1,785	45.3	165	6.7	11,805	85	24.0
	1937	8,275	11,761	20,036	29.2	45,768	3,168	1,791	47.9	287	9.8	24,101	88	49.1
Wabash	1938	13,953	7,850	21,803	8.3	38,403	1,833	602	19.4	442	35.8	3,932	107	60.2
	1937	10,668	10,346	21,014	6.6	37,609	1,801	627	19.8	587	44.6	4,963	104	72.2
Central Eastern Region:														
Baltimore & Ohio.....	1938	63,317	18,555	81,872	18.1	28,954	2,044	862	28.5	384	22.1	5,151	133	42.4
	1937	56,623	32,028	88,651	11.8	29,136	2,191	1,013	31.3	589	29.3	8,371	133	60.7
Central of New Jersey....	1938	10,495	8,792	19,287	32.9	29,368	2,387	1,111	33.0	242	12.4	6,778	128	48.8
	1937	9,549	9,998	19,547	26.5	27,911	2,379	1,121	32.6	295	15.1	9,008	128	73.6
Chicago & Eastern Illinois.	1938	3,504	2,496	6,000	5.7	26,886	1,403	559	23.7	470	30.1	3,053	123	51.5
	1937	2,980	3,701	6,681	3.4	29,387	1,569	625	23.4	555	35.1	3,986	120	62.6
Elgin, Joliet & Eastern*...	1938	8,633	1,910	10,543	12.8	15,987	1,679	695	30.5	152	8.5	3,711	121	40.6
	1937	8,276	6,439	14,715	6.4	18,162	2,099	1,050	38.0	260	11.1	8,682	111	67.3
Long Island	1938	369	3,670	4,039	3.9	6,125	854	345	31.0	84	5.1	715	279	40.4
	1937	382	3,426	3,808	3.4	6,087	823	332	31.8	83	5.1	843	304	46.4
Pennsylvania System	1938	209,239	41,726	250,965	17.6	38,385	2,533	1,036	27.0	282	17.2	7,073	111	43.3
	1937	176,113	71,392	247,505	17.3	36,839	2,469	1,113	30.7	488	25.3	11,981	112	66.6
Reading	1938	26,535	7,506	34,041	18.3	26,885	2,081	986	34.4	301	14.4	7,375	129	44.0
	1937	20,312	13,890	34,202	6.9	26,398	2,074	984	33.3	402	19.3	9,635	129	57.1
Pocahontas Region:														
Chesapeake & Ohio	1938	50,559	10,445	61,004	3.8	54,223	3,495	1,855	44.0	665	27.2	13,335	73	47.7
	1937	43,401	14,796	58,197	1.1	55,857	3,861	2,085	44.4	985	38.9	19,256	71	61.7
Norfolk & Western.....	1938	42,189	3,607	45,796	1.6	45,671	2,951	1,458	39.1	511	22.8	10,742	102	51.2
	1937	32,343	5,429	37,772	2.4	52,930	3,499	1,851	43.2	1,056	41.1	18,217	96	73.2
Southern Region:														
Atlantic Coast Line.....	1938	17,380	6,523	23,903	20.9	23,172	1,279	414	18.3	312	27.4	1,542	109	58.1
	1937	16,628	11,094	27,722	19.1	21,882	1,245	435	19.2	329	27.6	1,781	104	61.2
Central of Georgia.....	1938	6,073	3,524	9,597	1.5	22,643	1,181	450	21.5	397	26.0	1,828	116	70.9
	1937	3,279	4,432	7,711	2.8	22,741	1,231	488	21.6	551	35.0	2,267	123	79.6
Illinois Central (incl. Y. & M. V.).....	1938	36,721	14,332	51,053	15.2	28,148	1,645	625	24.2	488	33.4	3,879	126	52.0
	1937	29,493	20,778	50,271	15.3	26,419	1,510	593	23.9	619	40.2	4,778	126	65.9
Louisville & Nashville....	1938	41,071	8,460	49,531	16.3	25,495	1,566	665	29.2	444	25.8	4,530	123	70.5
	1937	31,719	11,917	43,636	13.2	25,893	1,668	758	31.8	716	38.0	6,464	120	87.8
Seaboard Air Line.....	1938	11,649	4,289	15,938	3.5	26,016	1,542	512	20.1	481	39.2	1,871	110	60.4
	1937	9,759	7,310	17,069	1.7	25,296	1,526	562	21.2	560	39.7	2,250	115	66.0
Southern	1938	21,458	15,738	37,196	10.7	22,504	1,272	488	22.5	469	32.4	2,692	137	53.4
	1937	20,688	21,427	42,115	11.1	22,113	1,277	515	22.4	512	33.3	3,351	142	60.6
Northwestern Region:														
Chicago & North Western..	1938	41,039	17,417	58,456	7.9	28,084	1,767	647	22.0	253	17.3	1,725	114	38.0
	1937	35,021	20,873	55,894	7.8	26,185	1,698	670	24.0	369	23.5	2,393	112	52.2
Chicago Great Western....	1938	2,692	2,435	5,127	3.3	30,857	1,748	620	21.7	815	61.2	2,952	124	86.4
	1937	2,023	3,977	6,000	2.7	32,265	1,757	649	22.2	932	65.7	3,951	123	101.3
Chi., Milw., St. P. & Pac. 1938		48,467	14,210	62,677	2.5	28,041	1,677	648	24.5	362	23.9	2,047	113	56.8
	1937	40,439	21,638	62,077	3.0	28,600	1,782	714	24.8	499	31.6	2,729	115	78.8
Chi., St. P., Minneap. & Om.	1938	4,282	5,202	9,484	9.9	18,554	1,337	561	25.3	369	21.7	2,097	107	51.2
	1937	4,236	4,797	9,033	10.2	19,512	1,442	592	24.9	476	28.5	2,581	101	59.4
Great Northern	1938	37,459	7,394	44,853	9.0	30,186	1,961	834	26.5	353	19.4	2,018	119	39.5
	1937	36,532	10,670	47,202	8.8	39,968	2,642	1,248	33.0	686	33.8	4,098	96	53.1
Minneap., St. P. & S. St. M.	1938	13,269	2,417	15,686	7.8	19,494	1,132	435	22.4	300	20.5	1,113	102	72.7
	1937	11,328	4,837	16,165	4.2	22,325	1,418	614	25.1	482	27.7	1,817	95	89.1
Northern Pacific	1938	32,060	3,823	35,883	11.9	30,748	1,888	762	24.2	371	22.8	2,096	144	46.5
	1937	25,960	6,198	32,158	8.9	32,125	2,011	859	25.8	590	33.9	2,959	139	59.0
Central Western Region:														
Alton	1938	2,570	5,794	8,364	13.5	33,278	1,350	495	24.3	360	26.0	3,220	125	65.3
	1937	2,476	6,012	8,488	24.4	33,855	1,469	533	23.6	435	30.9	4,068	121	81.6
Atch., Ton. & S. Fe (incl. G.C. & S.F. & P. & S.F.)	1938	79,467	12,766	92,233	11.4	34,089								

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Notice to Bidders—Signal material for highway grade crossing protection. Sealed proposals will be received at the office of the Purchasing Agent of the Illinois Terminal Railroad Company, 710 North 12th Boulevard, St. Louis, Missouri, until 10:00 A. M. Central Standard Time, August 29, 1938, for the furnishing of Signal Material to be used in connection with highway grade protection at two locations in the State of Illinois. Complete description of material and full information relative to bidding will be furnished by the Purchasing Agent on request.

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Sealed proposals will be received at the office of the Purchasing and Stores Agent of the Chicago and Eastern Illinois Railway Company, 332 South Michigan Avenue, Chicago, Ill., until 10:00 A. M. Central Standard Time, on the 31st day of August, 1938, for the furnishing of Signal Materials to be used for installation of Highway Grade Crossing Protection at two (2) Crossings in the State of Illinois. Complete description of materials and full information relative to bidding will be furnished by the Purchasing and Stores Agent on request. The right is reserved to reject any and all bids.

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Sealed proposals will be received by the Atlantic Coast Line Railroad Company, Wilmington, N. C., until 12 noon, August 27, 1938, for furnishing the necessary materials for the installation of flashing light highway crossing signals at Drivers, Virginia. Further information may be obtained from F. H. Fechtig, Purchasing Agent, Atlantic Coast Line Railroad Company, Wilmington, N. C.

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